The Acquisition of Verb Particle Construction in Cantonese-English Bilingual Children

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A Thesis Submitted in Partial Fulfillment

of the Requirements for the Degree of

Master of Philosophy

in

Linguistics

The Chinese University of Hong Kong

July 2010


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Acknowledgements

First and foremost, I would like to express my sincere gratitude to my supervisor Prof. Virginia Yip for her supervision, advice, guidance and patience during my M.Phil study. Most importantly, she provided me with unflinching support and encouragement in various ways. She always kindly grants me her time for discussions, reviewing and commenting on my presentations and thesis drafts, and this thesis would not have been completed or written without her. Her fascinating award-wining research on bilingual language acquisition and passion in the area exceptionally inspire and enrich my growth as a student and a researcher. I am indebted to her more than she knows.

I gratefully acknowledge Dr. Stephen Matthews for his valuable advice and guidance on this thesis. He generously used his precious time to read this thesis and I have benefited much from his critical comments for shaping up my ideas and research.

I gratefully thank all the professors in the Department of Linguistics and Modern Languages at CUHK for their teaching, guidance and advice which nourished my maturity during my undergraduate and M.Phil study. I thank Prof. Gu Yang for teaching me syntax and morphology and being my committee member. I thank Prof. Jiang Ping for teaching me phonology, and I enjoyed the time being her RA and TA. I thank Prof. Thomas Lee for teaching me semantics, research methodology and language acquisition, and being my committee member. I thank Prof. Gladys Tang for teaching me sign language studies and sign linguistics. Many thanks go to Prof. Peggy Mok, Prof. Yap Foong Ha, Dr. Fu Baoning, Prof. Donovan Grose and Prof. Candice Cheung for their continuous support and guidance.

Many thanks go to the team members of Childhood Bilingualism Research Centre for their friendship and assistance in handling the corpus data and friendship: Dr. Angel Chan, Uta Lam, Eunice Wong and Reace Wong.

I thank the participants at the Annual Research Forum of the Linguistic Society of Hong Kong (LSHK-ARF 2008), Conference on Bilingual Acquisition in Early Childhood (2008) and International Symposium on Bilingualism (ISB7) for their helpful comments and feedback on this work.

I would also like to express my gratitude towards the Graduate School in the

Chinese University of Hong Kong for providing me with a two-year studentship which made my full-time study possible. Moreover, I gratefully acknowledge the support of CUHK Postgraduate Student Grants for Overseas Academic Activities, which enabled me to attend ISB7 in Utrecht, the Netherlands.

I am very grateful to everyone in the Department of Linguistics and Modern Languages. Thanks to Joe Mak, Prudence Lau, Zu Xin, Lee Sang Im, Li Mingxing, He Jia, Guo Jie and Crono Tse for giving me such a pleasant time during class discussions and other activities. Thanks to Kelly Shum, Patrick Chu, Zuo Donghui, Deng Xiangjun, Chen Hui, Lam Chi Fung, Peng Yaya, and Chen Hui for their friendship. Special thanks to Cat Fung for creating such a great friendship for the past five years I spent at CUHK. I convey special acknowledgement to Peggy Ng, Gloria Poon, Manna Wong, Corsica Kong, Yeung Yim Bing, Brendan Kwok and Michael Cheng for their indispensable help in administrative matters.

Finally, I am heartily thankful to my parents for their continuous support and encouragement throughout my undergraduate and postgraduate years of study. Thanks to Hinwai for always being a supportive and caring sister.

List of Abbreviations

CL	Classifier
CV	Complex Verb
DP	Determiner Phrase
DVC	Directional Verb Complement Construction
MLU	Mean Length of Utterance
PFV	Perfective
Prt	Particle
SC	Small Clause
SFP	Sentence Final Particle
V	Verb
VP	Verb Phrase
VPC	Verb Particle Construction
xxx	non-recognizable speech

List of Tables

Abstract of thesis entitled:
The Acquisition of Verb Particle Construction in Cantonese-English Bilingual children
Submitted by **WONG, Hin Yee**
For the degree of Master of Philosophy in Linguistics
at The Chinese University of Hong Kong in July 2010

Cross-linguistic influence in bilingual first language acquisition has been widely identified in various linguistic domains with different language pairs. This corpus-based study investigates the factors governing cross-linguistic influence, including structural overlap, language dominance and language input by studying the acquisition of English verb particle construction (VPC) in seven bilingual Cantonese-English children. English VPC allows two types of word order, namely the split [verb-object-particle] and non-split [verb-particle-object] form, whereas the corresponding form simple Cantonese directional complement construction (DVC) permits only one of the two orders allowed (i.e., the non-split order [verb-simple directional complement-object]) in English VPCs. Although the word order in English VPCs and Cantonese DVCs constitute a partial overlap, the two are different in terms of the properties of their constituents and the compositionality of meaning. Results show that Cantonese-dominant bilingual children tend to produce non-split English VPCs much more frequently than monolingual children, and non-target forms related to VPC word order which are not reported in monolingual development are also found. In Cantonese DVCs, bilingual children produced non-target forms associated with the placement of objects and the use of directional complements which are not found in Cantonese monolinguals. These findings reveal that cross-linguistic influence takes place in both directions, where structural overlap and language dominance can account for the domain and extent of its occurrence.

摘要

在兒童雙語習得的研究中，很多學者在不同的語法領域及語言組合中發現了跨語言互動 (cross-linguistic influence)。本文透過語料庫，研究粵英雙語兒童的英語動詞-小品詞結構 (verb particle construction) 及粵語動詞-方向補語結構 (directional verb complement construction) 的發展模式，從而討論跨語言互動出現的因素，包括結構重疊 (structural overlap)，優勢語言 (language dominance) 和語言輸入 (language input)。英語動詞-小品詞結構存在兩種語序，分別爲〔動詞 - 賓語 - 小品詞〕([verb-object-particle]) 和〔動詞 - 小品詞 - 賓語〕([verb-particle-object])；這個結構的粵語對應結構動詞-簡單方向補語結構 (simple directional verb complement construction)只允許其中一種語序，爲〔動詞-簡單方向補語-賓語〕（[verb-simple directional complement-object]）。在語序上，這兩個結構形成了部分重疊（partial overlap），但同時他們的成分及語義組合中都各有不同。本研究發現在英語動詞-小品詞結構的發展中，以粵語爲優勢語言的雙語兒童的〔動詞-小品詞-賓語〕語序使用比率比英語單語兒童高，同時，雙語兒童使用了在英語單語兒童中沒有發現的非目標結構（non-target form）。在粵語動詞-方向補語結構的發展中，粵英雙語兒童在賓語位置和方向補語這兩方面出現了粵語兒童沒有使用的非目標結構。這些結果揭示了跨語言互動是雙方向的，而結構重疊和優勢語言可以解釋跨語言互動產生的領域及程度。

Contents

Chapter One Introduction

This thesis investigates the acquisition of the English verb-particle construction (VPC) and its corresponding form in Cantonese, the directional verb complement construction (DVC) in Cantonese-English bilingual children, comparing the developmental patterns of these two constructions to their monolingual counterparts. This chapter reviews and discusses the central issues on bilingual language acquisition, focusing on cross-linguistic influence: specifically, what are the conditions and relevant factors that govern cross-linguistic influence in bilingual acquisition? After a brief discussion of the structure of English VPCs and Cantonese DVCs, the structure of the thesis is presented.

1.1 Bilingual first language acquisition

Bilingual first language acquisition refers to the simultaneous acquisition of two languages from birth. Much of the earlier research in this field has focused on the issue of language differentiation, i.e., whether a bilingual child starts out with one unitary language system in the initial period of development. Volterra and Taeschner (1978) proposed a one system model involving three stages for bilingual development. In this model, bilingual children pass through an initial stage during which they only had one lexical system with words from both target languages. In

the second stage the bilingual children have two differentiated lexicons but one grammar only, whereas in the final stage the lexical and grammatical systems are completely separated.

However, following Meisel (1989) and Genesee (1989), many recent studies (de Houwer, 1990; Köppe, 1996; among others) criticized this unitary view and demonstrated that bilingual children are able to differentiate their two grammatical systems from early on without necessarily passing through a stage during which the two languages are undifferentiated. These studies provided evidence for language differentiation from early on with a number of language pairs in both lexicon (Quay, 1995) and syntax (Meisel, 1989; Genesee, 1989; de Houwer, 1990; Köppe, 1996; among others), and it is generally recognized that bilingual children have the ability to differentiate the two grammars in an early stage of language development. The question is how early evidence for differentiation is available in the different domains.

Despite the fact that bilingual children are capable of differentiating their two language systems, many researchers recognize the fact that the two languages are in contact and they may interact with each other (Döpke, 2000; Hulk & van der Linden, 1996; Müller, 1999; Nicoladis, 2003; Paradis & Navarro, 2003; Yip & Matthews, 2000, 2007; among others). Most recent work focuses on the interaction between the

two languages being acquired, i.e., the cross-linguistic influence from one language on the other.

1.2 Cross-linguistic Influence

1.2.1 Definition

The term *cross-linguistic influence* and *language transfer* are often used to describe the interaction between the two target languages in bilingual children. Paradis and Genesee (1996) introduced a number of concepts important for the study of cross-linguistic influence in bilingual acquisition. They define *interdependence* of bilingual development as "the systemic influence of the grammar of one language on the grammar of the other language during acquisition, causing differences in a bilingual's patterns and rates of development in comparison with a monolingual's" (Paradis & Genesee, 1996: 3), where *interdependence* might manifest itself as transfer, acceleration or delay compared with monolingual development. According to their definition, *systemic influence* occurs at the level of competence, which is sustained over a period of time. They define *transfer* as "incorporation of a grammatical property into one language from another" (Paradis & Genesee, 1996: 3). In terms of the rate of development, *acceleration* in bilingual development occurs when a grammatical feature emerges earlier than the normal schedule of monolingual

development, while *delay* refers to the case when a grammatical feature emerges later than the typical monolingual development.

Yip and Matthews (2007) distinguish between *cross-linguistic influence* and *transfer*, where *transfer* constitutes a subset of the superset *cross-linguistic influence*. Following Paradis and Genesee (1996), they adopt the definition of *transfer* as "incorporation of a grammatical property into one language from another" (Paradis & Genesee 1996: 3, cited in Yip and Matthews, 2007). They further elaborate that *transfer* may occur in the form of grammatical properties which are not found in the recipient language, and these properties can be attributed to the source language. Non-target structures which are not found in monolingual development are therefore evidence of *transfer* from the source language. On the other hand, *cross-linguistic influence* may take the form of quantitative differences between monolingual and bilingual children. For instance, null objects are found in both monolingual and bilingual children in their study, with a much higher percentage in bilingual children. This quantitative difference between the two groups of children in null objects can be attributed to *cross-linguistic influence*. Since the occurrence of null objects is found in both monolingual and bilingual development, this is therefore not a case of transfer. Rather the crucial point is that the two groups of children show significant quantitative difference in this grammatical domain which constitutes a form of

cross-linguistic influence.

This study adopts Yip and Matthew (2007)'s definition of *transfer* and *cross-linguistic influence*: *cross-linguistic influence* is the superset of *transfer*, where *transfer* takes the form of non-target structures with grammatical properties incorporated from the source language that are not found in monolingual children. Different from *transfer*, *cross-linguistic influence* takes the form of quantitative difference in a grammatical domain between monolingual and bilingual development. In addition, we include the rate of development, acceleration and delay, as manifestations of *cross-linguistic influence*, following Paradis and Genesee (1996).

1.2.2 Cross-linguistic influence in bilingual development

Cross-linguistic influence has been reported in various linguistic domains with different language pairs in bilingual development including syntax (Döpke, 1998; Müller, 1998; Yip & Matthews, 2000, 2007; Müller & Hulk, 2001, among others), phonology (Paradis, 2001) and derivational morphology (Nicoladis, 2002). In these studies, cross-linguistic influence is manifested as transfer of a structure from one language to another or the quantitative difference in terms of the rate of acquisition of a certain structure between bilinguals and monolinguals.

Döpke (1998), for example, reported that the three English-German bilingual

children in her study produced non-target structures of verb placement in German for an extended period of time. Hulk and Müller (2001) studied the object omission rate in three German-French, Dutch-French and German-Italian bilingual children in comparison with German, Dutch, French and Italian monolingual children. They found that bilingual children had a higher object omission rate in Italian and French than their monolingual counterparts. For Cantonese-English bilingual children, Yip and Matthews (2000, 2005, 2007) found cross-linguistic influence from Cantonese to English in the domain of wh-in-situ interrogatives, null objects and prenominal relative clauses, as well as influence from English to Cantonese in the domain of *bei2* 'give' double object datives constructions.

While many cases of cross-linguistic influence have been identified, some studies claimed that there is no such influence in the development of the two target languages in bilingual children (Paradis & Genesee 1996, Hulk & Müller, 2000, among others). Paradis and Genesee (1996) found no evidence of cross-linguistic influence in the acquisition of finiteness, agreement and negation in French-English bilingual children. Hulk and Müller (2000) found no cross-linguistic influence in the use of root infinitives in a French-Dutch bilingual child and an Italian-German bilingual child. The absence of cross-linguistic influence in certain grammatical domains had led the researchers to investigate conditions or factors in predicting the

occurrence of cross-linguistic influence.

1.3 Structural overlap

Assuming that the two languages of bilingual children are separated from early on, Hulk and Müller (2000) have proposed a structural overlap hypothesis in explaining why certain domains are prone to cross-linguistic influence. They propose two conditions for the occurrence of cross-linguistic influence (Hulk & Müller 2000: 228-229):

(1) Cross-linguistic influence occurs at the interface between two modules of grammar, and more particularly at the interface between pragmatics and syntax in the so-called C-domain, since this is an area which has been claimed to create problems in L1 acquisition also.

(2) Syntactic cross-linguistic influence occurs only if language A has a syntactic construction which may seem to allow more than one syntactic analysis and, at the same time, language B contains evidence for one of these two possible analyses. In other words, there has to be a certain overlap of the two systems at the surface level.

For the first condition, Hulk and Müller (2000) suggested that cross-linguistic influence is more likely to occur in areas which are also problematic or "vulnerable" across different types of learners (e.g., monolingual children, adult second language learners), and one of these possible areas is the C-domain of the clause, where syntax and pragmatics interface. They suggested that "in the C-domain the information exchanged concerns pragmatic, discourse-related information and information regarding sentence types" (Hulk & Müller, 2000: 228). According to their definition, verb second, complementizers and topicalization are typical grammatical properties related to the C-domain, whereas pre- and postposition, the word order between verb and object, the word order between object and adverbials belong to other domains.

The second condition predicts that cross-linguistic influence is more likely to occur when there is an overlap in surface structure within certain grammatical domains between the two languages. More specifically, when a grammatical domain in language A allows two or more surface structures and such grammatical domain in language B permits only one of these surface structures, cross-linguistic influence are predicted to occur due to the surface structure overlap of the grammatical domain in language A and language B.

Hulk and Müller (2000) supported their hypothesis by studying the rate of object drop (which satisfies the two conditions) in a bilingual Dutch-French and a

German-Italian child in comparison with their monolingual counterparts. German and Dutch allow object drop only in clause-initial position where the object has the pragmatic function of topic. Therefore, the choice of null/overt object is licensed by discourse pragmatics, and thus satisfying the first condition. In French and Italian, object drop is not allowed regardless of the topic function of the object. However, constructions with a preverbal pronominal object clitic are very frequent:

(1). Jean le voit ___

John him sees (Hulk and Müller, 2000: 230)

In this example, the postverbal object position is empty. This type of construction may be ambiguous for the bilingual children, suggesting to them that object drop is allowed in French and Italian. In other words, there is a surface overlap between German/Dutch and French/Italian where the object can be dropped. Therefore, the object drop in the language pairs is said to satisfy the second condition. Results show that the bilingual children had a higher object omission rate in Italian and French than the monolinguals, which is taken as evidence for cross-linguistic influence from Germanic languages (Dutch and German) to Romance languages (French and Italian) .

Although they highlighted the importance of pragmatics in their first condition,

they did not elaborate on the pragmatics of object omission in detail. Their study focused on the frequency of object drop rate without systematically examining the pragmatic context of the object drop rate. For instance, we do not know the contextual or pragmatic conditions for an object to be omitted. Another problem with the first condition is that the construct "interface" is not well defined. The property of interfaces and the types of interfaces are unclear. In addition, certain grammatical domains where cross-linguistic influence is found are not attributed to the C-domain: the VO-OV word order in English-German bilingual children (Döpke, 1998) and the word order of the finite verb in subordinate clauses in German, French, English and Italian (Müller, 1998). Therefore, it is still unclear whether this condition is necessary and sufficient in determining the conditions under which cross-linguistic influence occurs. In this study, we mainly focus on the word order between verb and particle in English, and between verb and directional complement in Cantonese, where both of them do not belong to the C-domain as Hulk and Müller (2000) suggested. It is therefore interesting to know whether these structures in this study, which are not at the syntax-pragmatics interface, exhibit cross-linguistic influence: if cross-linguistic influence does occur in these structures, the relevance of the syntax-pragmatics interface might not be strongly motivated.

As for the second condition, on the other hand, many studies have shown that its

relevance is indeed highly motivated. Evidence has been found to support the occurrence of cross-linguistic structures where the condition of structural overlap is met (Döpke 1998, 2000; Müller, 1998; Paradis & Navarro, 2003). Döpke (1998, 2000) suggested that the partially overlap structures in English and German may lead to the non-target forms of German word order in English-German bilingual children. In her study, she found that English-German bilingual children produced verb-complement (V_XP) word order more frequently in their German than German monolinguals. In German, both V_XP and XP_V word orders are allowed, the complement can precede or follow the main verb; in English, on the other hand, the complement always appears after the main verb, resulting in a V_XP order. Döpke argued that her subjects overgeneralized V_XP word order in their German due to the fact that the surface form of V_XP order can occur in both German and English, whereas XP_V order occurs only in limited cases of German clauses. Paradis and Navarro (2003) studied the use of overt subjects in Spanish by one Spanish-English bilingual child and two Spanish monolingual children. Spanish allows both overt and null subjects, whereas overt subject is obligatory in English. Their results showed that the bilingual child produced overt subjects at a higher rate in her Spanish than the two monolingual children. This implies that cross-linguistic influence occurs from English (overt subject) to Spanish (overt or null subject) due to the overlap in

overt subject between the two languages. These two studies support the condition of structural overlap, where language A allows two structural options and language B allows only one of them, and cross-linguistic influence is likely to occur from language B to language A.

However, in some grammatical domains cross-linguistic influence is not found despite the fact that these domains meet the structural overlap condition as suggested by Hulk and Müller (2000). Nicoladis (1999) investigated the word order of adjective in a French-English bilingual child. While French allows both pre-nominal and post-nominal adjectives, only pre-nominal adjectives are permitted in English. The bilingual child in Nicoladis (1999)'s study, however, did not show cross-linguistic influence in his placement of adjectives. Unsworth (2003) test Hulk and Müller (2000)'s two conditions by studying the root infinitives in a German-English bilingual child. Unlike root infinitives of the language pairs French-Dutch and Italian-German investigated in Hulk and Müller (2000), which satisfy only the condition on syntax-pragmatic interface but not the condition on structural overlap, the root infinitives in English and German meet both conditions. Results in her study shows no evidence of quantitative and qualitative cross-linguistic influence in the bilingual child investigated. Unsworth (2003) suggested that the notion of "certain overlap" in the second condition needs to be refined: "certain overlap" should be

partial instead of complete. If there is a complete overlap, the bilingual children would simply equate the grammatical domains in the two target languages and thus it might not be possible to identify cross-linguistic influence.

Another problem with this proposal has to do with the directionality of transfer. According to Müller and Hulk (2001), cross-linguistic influence should be unidirectional under their structural overlap hypothesis: from language B (which permits only one structural options) to language A (which allows two structural options), but this is not always the case. Nicoladis (2002) studied the compound nouns in French-English bilingual children, and found cross-linguistic influence in both directions in these children's French and English. Finally, cross-linguistic influence occurs in certain domains which are not predicted by Hulk and Müller's proposal. Yip and Matthews (2000, 2007), for instance, found cross-linguistic influence in the domain of wh-interrogatives and relative clauses in a Cantonese-English bilingual child, despite the fact that these structures are syntactically different and do not constitute overlap in Cantonese and English. Hulk and Müller (2000) claimed that the two conditions in their proposal are 'sufficient but not necessary'; we might therefore expect that other factors may play a role in accounting for cross-linguistic influence.

1.4 Language dominance

In the bilingual acquisition literature, it has often been noted that one language usually develops faster or dominates the other in bilingual children. The term "dominance"[1] has often been defined in terms of proficiency (Deuschar & Muntz, 2003; Genesee, Nicoladis, & Paradis, 1995; among others), where the dominant language of a bilingual child is considered to be more proficient than the other. In the studies of cross-linguistic influence, language dominance has often considered as a causal factor (Yip & Matthews, 2000; Kupisch 2007). Bilingual children may incorporate certain grammatical structures from their dominant into their less dominant language.

Defining language dominance in terms of the differential of Mean Length of Utterance (MLU) values, Yip and Matthews (2006, 2007) found evidence of language transfer from Cantonese to English in a Cantonese-English bilingual child during a period when he was more dominant in Cantonese (i.e., the MLU value for Cantonese is higher than that of English). Transfer of Cantonese-based wh-in-situ interrogatives and prenominal relative clauses is found in the Cantonese-dominant bilingual child's English. The target wh-interrogatives and relative clauses are syntactically different in both languages and they do not constitute structural overlap.

[1] "Dominance" is defined in terms of the bilingual children's amount of exposure to their two target languages in some other studies (e,g. Grosjean, 1982; Klausen, Subritzky and Hayashi, 1993).

For instance, English wh-interrogatives sentences are derived by moving the wh-words to the sentence initial position, while in Cantonese interrogatives the wh-words remain in-situ. The child in their study produced sentenced like *This on the what?* Where *what* remains in-situ in a wh-interrogatives (Yip & Matthews, 2000: 198). Kupisch (2007) defined language dominance based on five indicators: MLU, the longest utterance in a recording, number of utterances per 30 minutes of recording, and noun and verb types. In her study of the acquisition of determiners in German-Italian children, she found cross-linguistic influence from Italian to German in the balanced and Italian-dominant children but no cross-linguistic influence in the non-Italian-dominant children. Kupisch (2008) also studied the acquisition of articles in another language pair: German and English, where there is no structural partial overlap in the articles of both languages. Results show that acceleration in development occurred in three German-English bilingual children, and in this case, language dominance was the principal determinative explanatory factor in the cross-linguistic influence (in the form of acceleration in development).

However, the factor of language dominance does not seem to play a role in cross-linguistic influence in some other studies. Hulk and Müller (2000) excluded the factor of language dominance as an explanation for the cross-linguistic influence observed. Nicoladis (2002) studies the French-English bilingual children's structure

of compound nouns in French and English and results show that the rate of non-target forms (reversals in compound structures) are not correlated with the children's degree of language dominance in each language. These studies have only tested relatively limited cases of grammatical domains with a small number of language pairs. It is questionable whether the factor of language dominance should be discarded as suggested by Hulk and Müller (2000).

In fact, some recent studies consider both the factor of structural overlap and language dominance in predicting the occurrence of cross-linguistic influence (Kupisch, 2007; Foroodi-Nejad & Paradis, 2009). In the study of determiners of determiners in German and Italian, Kupisch (2007) concluded that both language dominance and the properties of the two target languages should account for the occurrence of cross-linguistic influence. Foroodi-Nejad and Paradis (2009) examined the acquisition of compound words in Persian-English bilinguals, and results show that cross-linguistic influence occur in both directions: bilingual children produced more right-headed Persian compounds and more English left-headed compounds compared to their monolingual counterparts. They concluded that both structural overlap and language dominance attributed to the occurrence of cross-linguistic influence. Yip and Matthews (2007) suggested that language dominance should be considered as 'an indispensable factor interacting with other factors' (Yip &

Matthews, 2007: 41), playing a crucial role in determining the extent of language transfer. In other words, if cross-linguistic influence occurs from language A to language B, the extent of influence will be greater if the degree of dominance of language A relative to Language B is greater in the bilingual child. Therefore, it is suggested in this study that language dominance of bilingual children should be taken into account together with other factors in yielding a comprehensive account of cross-linguistic influence.

1.5 Language Input

Apart from structural overlap and language dominance, bilingual children's parental language input has also been studied in relation to cross-linguistic influence. Paradis and Navarro (2003) investigated subject realization in one Spanish-English bilingual child and the language input the child received from her parents. While focusing on the frequency of overt versus null subjects and the discourse-pragmatics contexts of overt subjects, they also looked at these two variables in parental language input. Results show that the bilingual child used more overt Spanish subjects than monolingual children, indicating cross-linguistic influence from English to Spanish. They concluded that both factors, namely the language internal factor (the overlap at surface level) and external factors (language input) can attribute to the

cross-linguistic influence found in the child. According to Paradis and Navarro (2003), the factor of parental input should be taken into account due to its potential effect on bilingual children's output. First, the structural overlap hypothesis (Hulk & Müller, 2000; Müller & Hulk 2001) assumes that the cross-linguistic influence in bilingual children is the result of how children process the input of the two target languages. The language input bilingual children received from their parents might differ from that of monolingual children: parents of bilingual children may produce input that exhibits cross-linguistic influence since at least one of them might be bilingual, and as a result this feature of cross-linguistic influence from bilingual parents may have an effect on their bilingual children. Therefore, the cross-linguistic influence exhibited in parental input may in turn be a source of cross-linguistic influence in bilingual children.

1.6 Individual variation

Hulk and Müller (2000) claimed that the two conditions in their proposal are necessary but not sufficient due to the existence of individual difference among bilingual children: some bilingual children may not show indication of cross-linguistic influence while others may. It is possible that bilingual children, regardless of their language dominance patterns, may behave differently from each

other. Nevertheless, it should not be a determinative reason in accounting for cross-linguistic influence. The fact that the two conditions proposed by Hulk and Müller (2000) are not sufficient may not simply be due to individual variation: other conditions or factors should also be considered. Some recent studies (Paradis & Navarro, 2003; Kupisch, 2007; Foroodi-Nejad & Paradis, 2009) reported that more than one factor should be taken into account for cross-linguistic influence. While it is expected that individual variation exists among bilingual children, one of the goals of this study is to find out the relevance of the other factors mentioned earlier in this chapter in accounting for cross-linguistic influence.

To summarize, while the two linguistic systems are separate in the early stages of bilingual development, the two systems are indeed in contact and cross-linguistic influence may occur at least in certain grammatical domains. However, not all the domains investigated in early bilingual acquisition show cross-linguistic influence: what are the factors that play a role in accounting for and predicting the occurrence of cross-linguistic influence? While Hulk and Müller (2000) have proposed two language internal conditions on cross-linguistic influence, language dominance and parental input have also been considered to be relevant factors in cross-linguistic influence. This thesis examines a number of factors which may cause cross-linguistic influence by investigating the acquisition of verb particle construction in

Cantonese-English bilingual children. The development of the target structures in both languages is examined, including VPC and its corresponding form Cantonese DVC. Quantitative as well as qualitative differences, or any form of cross-linguistic influence, including the number of non-target structures and rate of acquisition between the bilingual children and monolingual children are examined to shed light on the nature and conditions of cross-linguistic influence.

1.7 English VPC and Cantonese DVC

The English VPC consists of three elements: a verb, a particle and a direct object. One of the striking properties of VPC is the alternation of the particle in the non-split and split order:

(3) Non-Split VPC

She *looked up* the information.

(4) Split VPC

She *looked* the information *up*.

In (3), the particle *up* occurs immediately adjacent to the verb and before the object *the information*, which we will refer to as the *non-split* VPC. In (3) the particle

occurs after the object, which is termed the *split VPC.* If the object in the VPC is an unstressed pronoun, it has to appear in the split order in (5a). If the pronoun occurs in the non-split order (5b), the sentence is ungrammatical:

Placement of unstressed pronoun in VPC

(5) a. She *looked* it *up*.

b. *She *looked up* it.

In Cantonese, simple directional verb complement constructions (DVC) such as (6a) are the closest equivalent of the English VPC. DVC as in (6a) consist of three elements: a main verb *geoi2* 'lift', a directional complement *hei2* 'up' and a direct object *zek3 sau2* 'the hand'. According to Cheung (2007), the complements can be classified into nine groups, including a class of directional complements which indicates the movement or path of the verb, similar to English particles in the sense that they follow the main verb, indicating directional meaning. This class of directional complements such as *hei2* 'up' in (6a), which itself can appear in main verb position, can appear as complement after another main verb (e.g. *geoi2* 'lift' in (6a)) to form a simple DVC, expressing the spatial/directional meanings with respect to the main verb.

The order of simple Cantonese DVC is more restricted than that of English VPC. Inserting the object between the verb and the directional complement (just as the split order in English VPC) results in ungrammaticality as in (6b):

Cantonese simple DVC

(6) a. 我 舉 起 隻 手.

ngo5 geoi2 hei2 zek3 sau2

I lift rise the hand

'I lift rise the hand'

b. *我 舉 隻 手 起 .

ngo5 geoi2 zek3 sau2 hei2

I lift the hand rise

'I lift the hand up.'

(6a) is a typical example of simple DVC in Cantonese. In (6a), the object *zek3 sau2* 'the hand' occurs after the main verb *geoi2* 'lift' and the directional verb complement *hei2* 'rise'. The sentence is ungrammatical if we put the object *zek3 sau2* 'the hand' between the main verb *geoi2* 'lift' and directional complement *hei2* 'rise' as shown

in (6b). In simple DVC, the object cannot occur between the verb and the directional verb complement.

Unlike English VPC where pronouns are not permitted after the particle, a pronoun can occur after the directional verb complement. A pronoun such as *keoi5* 'it' can occur after the verb and the directional verb complement *dai1* 'down' in the following example:

(7) 我　擺 低　佢

ngo5 baai2 dai1　keoi5

I　put　down　it.

'I put it down'

In terms of form and meaning, Cantonese DVCs are comparable to English VPCs: in form they both consist of three elements: a main verb, an object and another element following the verb (the English particle and Cantonese directional complement); in meaning the English particle and Cantonese directional complement both express the spatial/directional meanings with respect to the main verb. The two structures share a particular word order where the object appears after the main verb and the element expressing directional meaning: main verb + English particle/Cantonese directional

complement + object. However, these two constructions differ semantically and syntactically despite the partial overlap in surface word order, the investigation of the acquisition of these constructions in bilingual children will shed light on the nature and factors governing cross-linguistic influence in bilingual acquisition.

1.8 Organization of the thesis

This thesis investigates the development of English verb particle construction and its corresponding form in Cantonese[2] in Cantonese-English bilingual children. The bilingual subjects in this study are Cantonese-dominant, English-dominant or balanced so that issues related to language dominance can be addressed. Apart from English VPC, we also look at the development of its corresponding form Cantonese DVC so that directionality of transfer can also be examined.

The qualitative and quantitative differences between bilingual and monolingual children in their development of verb particle construction are examined: qualitatively, we identify and analyze the non-target structures occurring in bilingual children but not in monolingual children, showing the structural transfer of one language to another; quantitatively, we demonstrate the difference in frequency/percentage of structures in comparison with monolingual children. Rates

[2] The corresponding form of English verb particle constructions in Cantonese is verb directional complement constructions. The two constructions in the two languages differ in a number of ways which will be elaborated in Chapter 2.

of bilingual and monolingual development are also studied as a form of cross-linguistic influence in bilingual children.

While many studies have tested Hulk and Müller (2000)'s proposal in different grammatical domains with different language pairs, little has been done with respect to Cantonese and English. We examine whether the Hulk and Müller (2000)'s conditions can apply to the domain of English VPC in Cantonese-English bilingual children. A number of other factors including structural differences between the two target language, language dominance and parental input will also be discussed in accounting for cross-linguistic influence. We evaluate the relevance of these factors and conditions, demonstrating how these factors interact with each other in bringing about cross-linguistic influence.

The structure of the rest of the thesis is presented as follows. Chapter 2 discusses the syntax and the semantics of English VPC and its corresponding form Cantonese DVC. Differences between these two constructions are examined. Different approaches to the analysis of English VPC and Cantonese DVC are presented. We will see that English and Cantonese DVC show partial overlap in surface structure and this overlap satisfies Hulk and Müller (2000)'s second condition, which may contribute to cross-linguistic influence. Chapter 3 reviews previous studies on the acquisition of English verb particle constructions in

monolingual and bilingual children. Previous researchers have reported that monolingual English-speaking children tend to produce the split order more frequently than the non-split order, while bilingual Cantonese-English bilingual children tend to produce non-split VPCs more frequently than the split VPCs. This chapter reviews some major studies on the acquisition of English VPCs in monolingual children which serve as baseline for comparison with the development of bilingual children. Chapter 4 presents the methodology, hypotheses and predictions of our study. Background information including input conditions and the degree of dominance of the seven bilingual children are discussed. Hypotheses and predictions are made based on the syntactic differences between the English VPCs and Cantonese DVCs and the language dominance in the bilingual children. Chapter 5 reports findings on the acquisition of English VPCs in bilingual children, including the word order of bilingual children's English VPCs, the types of VPCs produced as well as the non-target forms attested. A multifactorial analysis is conducted to investigate which linguistic variables are more significant in accounting for the distribution of the different VPC orders in bilingual children in comparison with monolingual children. An input analysis is also carried out in two of the bilingual children. These procedures can demonstrate how several factors can account for cross-linguistic influence. Chapter 6 reports the development of

Cantonese DVC in both monolingual Cantonese-speaking children and Cantonese-English bilingual children. The development of Cantonese DVC in monolingual children has not been extensively studied in the literature. We will examine the type of DVCs produced and the distribution of the directional verb complement in DVCs. Non-target forms of Cantonese DVCs in the bilingual children are also discussed in this chapter. Chapter 7 discusses the characteristics and the factors governing the cross-linguistic influence in the acquisition of English VPC and Cantonese DVC. We will discuss the conditions where cross-linguistic influence occurs and evaluate possible factors that may cause cross-linguistic influence with respect to English VPC and Cantonese DVC. Chapter 8 concludes the thesis and makes suggestions for future research.

Chapter Two The structure of English VPC and Cantonese DVC

In this chapter, we first review the syntax and semantics of English VPC and Cantonese DVC. We then discuss the similarities and differences between these two constructions. In the surface form the two structures in the two target languages constitute a partial overlap of the surface word order based on Hulk and Müller (2000)'s condition on structural overlap, therefore this area may be prone to cross-linguistic influence. On the other hand, English VPC and Cantonese DVC differ in both semantic properties and syntactic structure. The understanding of these two structures may help us to formulate hypotheses that make predictions for cross-linguistic influence in bilingual acquisition.

2.1 English VPCs

2.1.1 Semantic classes of English VPCs

In the literature, VPCs are often distinguished by their semantic properties. The meaning in the combination of the verb and the particle in a VPC can be idiosyncratic, semi-idiosyncratic or compositional. For instance, in the VPC *put off*, its meaning '*delay, postpone*' cannot be inferred directly from the verb *put* and the particle *off*. On the other hand, in VPCs such as *put back*, the particle *back* compositionally adds a specific meaning to the verb *put,* indicating a reversion to the

original location. A three-way classification[3] of VPCs is adopted in Dehe (2002) and Jackendoff (2002): (1) compositional (semantically) VPCs, (2) aspectual VPCs and (3) idiomatic VPCs. The meanings of compositional VPCs are determined by the literal meanings of the verb and the particle (e.g. *put back*). In aspectual VPCs, the particle usually adds aspectual component to the action (e.g. *drink up*). In idiomatic VPCs, the meanings cannot be determined from the verb and the particle (e.g. *give up*). The three types of VPCs are discussed in the following section.

2.1.1.1 Compositional VPCs

In compositional VPCs, the literal meaning of the verb and the particle together contributes to the meaning of the entire VPC, and the verb particles in this class are often directional or spatial in meaning, denoting the path of a motion. For example, in *He put the cup down*, '*the cup*' is literally moved to a downward position as encoded in the particle '*down*'. The verb and the particle compositionally determine the meaning of this type of VPCs.

In describing the features of compositional VPCs, Jackendoff (2002) explains that some verbs (e.g.*take, put* and *carry*) select a directional prepositional phrase (PP) as an argument, such as *into the house* in (1a), and such PPs can be replaced by a

[3] Some linguists (Sawyer 2001; Wurmbrand 2000) classify English VPCs into two groups: namely the compositional and non-compositional VPCs. The major difference between this classification and others is aspectual VPCs are treated as either compositional or non-compositional VPCs.

directional particle, such as *away* in (1b). The construction in (1b) can also occur in the non-split order as shown in (1c):

(1) a. Peter threw the food into the house.

b. Peter took the food away.

c. Peter took away the food.

In these examples, a directional PP *into the house* in 1(a) can be replaced by a directional particle *away* in (1b). Jackendoff (2002) suggests that the particle in (1b) satisfies one of the verb's argument positions (i.e. the prepositional phrase) in (1a) and therefore the meaning is fully compositional. This might also explain why some particles are homophonous to prepositions, since the argument position associated with the path role can be realized as either a PP or a particle.

2.1.1.2 Aspectual VPCs

In aspectual VPCs, the particle contributes an aspectual interpretation to the verb. A typical example is the particle *up*, which 'adds the concept of a goal or an endpoint to durative situations which otherwise have no necessary terminus' (Brinton 1985:160). *Up* in (2a) roughly means 'completely'. Jackendoff (2002) suggests that *up* in fact

does not form an idiomatic combination with the verb, and the meaning is fully predictable since the particle *up* itself contains certain aspectual meanings. For example, the *up* in (2a) contains the aspectual meaning of completion. In addition, the aspectual *up* in VPCs, just as the particle in compositional VPCs, can occur in either split or non-split order, as follows:

(2) a. She drank the milk up.

b. She drank up the milk.

Other aspectual particles Jackendoff (2002) has discussed include *away* (e.g. *sleep the day away*), *on* (e.g. *run on*), *through* (e.g. *play the aria through*), and *over* (e.g. *do the problem over*).

2.1.1.3 Non-compositional VPCs

In contrast to the compositional VPCs, the meaning of non-compositional VPCs (also termed as idiomatic VPCs) is not fully predictable from the meaning of its constituents (i.e. the verb and the particle). Examples of idiomatic VPCs include *look up, throw up, bring up*. In these examples, the original meaning of the main verb and the particle is not fully retained after they form a VPC. Take the sentence *He looked*

the word up as an example, 'the word' is not literally in an upward position. Like the other types of VPCs, non-compositional VPCs can occur in either split or non-split order[4].

2.1.2 The Structure of English VPCs

The linguistic literature contains an extensive but somewhat inconclusive body of work on the analysis of the structure of English VPCs. The disagreement derives from two major approaches: the small clause (SC) approach and the complex verb (CV) approach. The basic structures derived from these two approaches are given in (3) and (4) respectively.

---

[4]According to Fraser (1976), the order of idiomatic VPCs can be either fixed as in (2a) (allowing only one particular split/non-split order) or variable in (3) (allowing both split/non-split order):

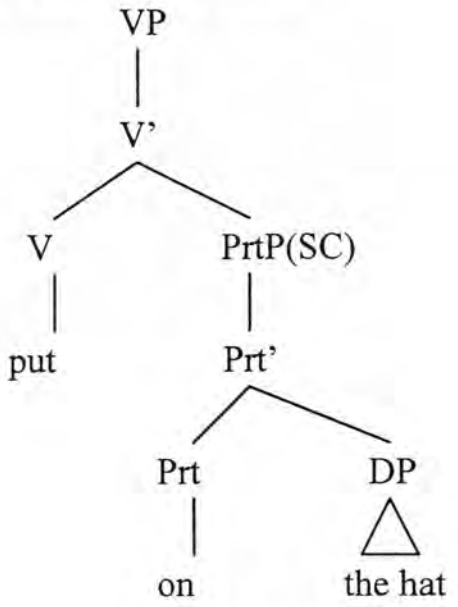
(2) a. get up one's energy
b. ?get one's energy up
(3) a. turn back the clock
b. turn the clock back

(Fraser, 1976:19)

However, the degree of ungrammaticality of (2b) varies among native speakers of English. Since we only focus on VPCs that allow both split and non-split order in this study, the issue of ungrammaticality in split/non-split order among some VPCs is not addressed here.

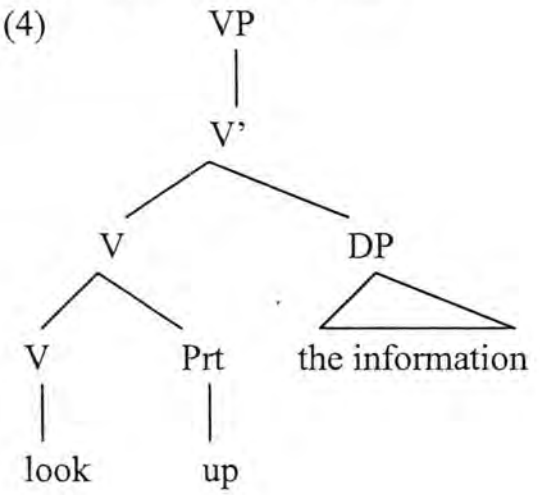
The Small Clause Approach

(3)



The Complex Verb Approach

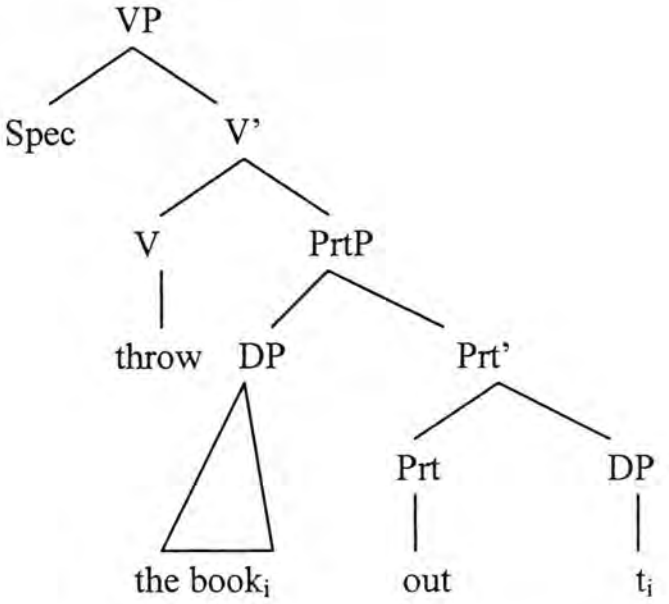
(4)



2.1.2.1 The Small Clause approach

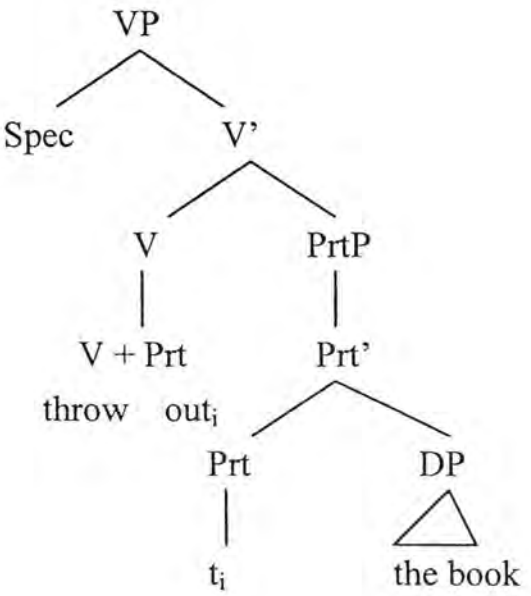
In the SC approach, the particle is assumed to have its own projection. The particle is part of a small clause which is complement to the verb, and the object is base-generated as the complement of the particle (den Dikken, 1995; Haegeman & Gueron, 1999). According to Den Dikken (1995), the Prt is 'ergative' and cannot assign Case. The DP has to move to the subject position of the small clause to receive accusative case from the higher V, where the split order is derived:

(5)



Under the SC approach, the non-split order is considered to have undergone incorporation where the particle joins the verb to form a complex verbal head, and the incorporation is optional (den Dikken, 1995; Haegeman & Gueron, 1999).

(6)

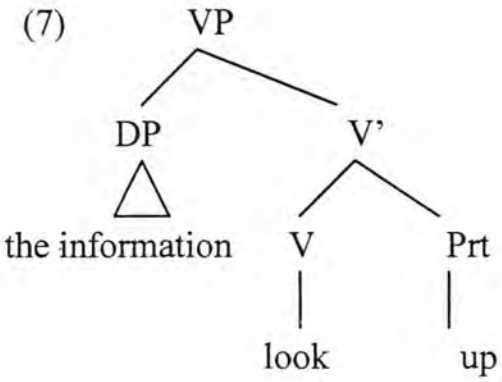


2.1.2.2 The Complex Verb approach

In the CV approach (Johnson, 1991; among others), the verb and the particle together form a single lexical item functioning as a complex head in syntax, which

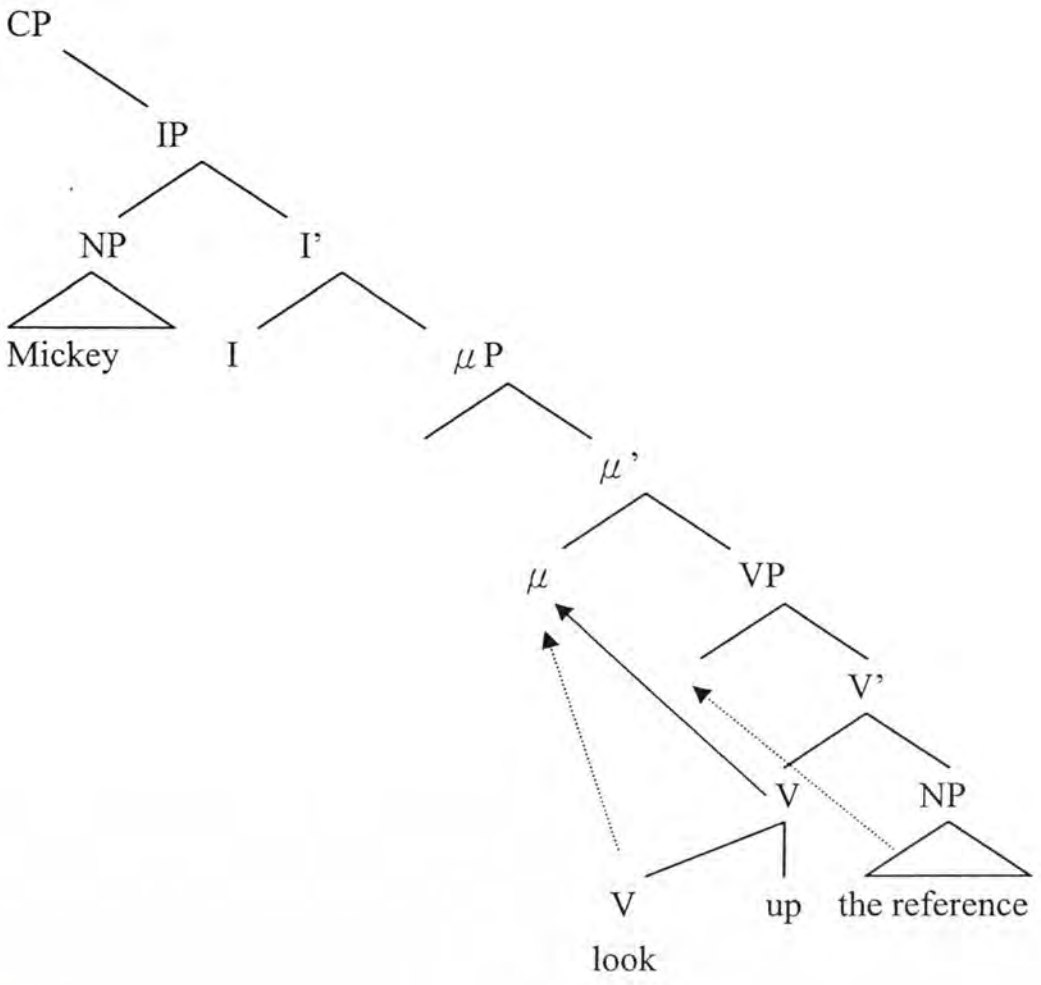
then raises to a functional head above VP. In this approach, the particle is a sister to the verbal head V'.

(7)



Johnson (1991) proposed the following structure for VPC:

(8)



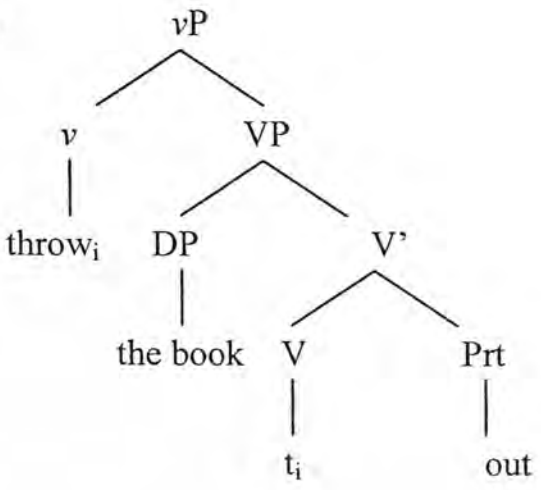
Johnson (1991: 600)

In Johnson (1991)'s proposed structure, the [verb+particle] is inserted as a complex head under V. The non-split order is derived by raising the complex head [V Prt] to μ. For the split order, the verb alone raises to μ, and object moves to the Spec VP to receive, resulting in a split order where the particle is separated from the complex head [V Prt].

2.1.2.3 Radford (2005)

Assuming the vp-shell structure of verb phrases, Radford (2005) proposes the following structure for VPC:

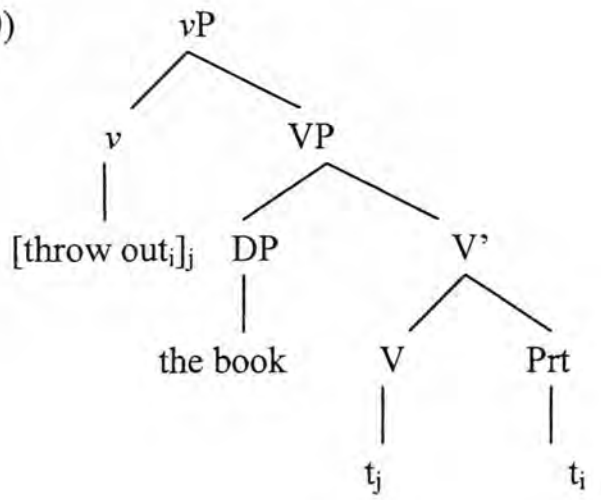
(9)



In this structure, the particle *out* is merged with the V *throw*. V moves to *v* such that the unvalued Case feature of the DP *the book* is valued as accusative.

The non-split order is derived by the incorporation of the particle into the V:

(10)



2.1.2.4 Wurmbrand (2000)

Wurmbrand (2000) classifies English VPCs into two types: compositional and non-compositional VPCs. He argues that the compositional VPCs and non-compositional VPCs are both semantically and structurally distinct: compositional VPCs form a small clause structure whereas non-compositional VPCs form a complex head structure. More specifically, compositional VPCs contain a predication relationship between the particle and the direct object, where the particle predicates some property of the direct object. For example:

(11)	VPC	Predication
a.	He put the shoes on.	The shoes are on.
b.	She put the book down.	The book is down.
c.	She picked the pen up.	The pen is up.

In the above examples of compositional VPCs, the particle predicates a property of the object. According to Stowell (1978), the predication relationship can be represented by a small clause structure, in which the particle and the direct object form a small clause.

On the other hand, the particle in a non-compositional VPC does not predicate a property of the object. For instance, the particle *up* in *look up*, as in *The girl looked up the information*, does not predicate a property of the object: the information is not up. Since there is no predication relationship between the particle and the object, the small clause structure is not applicable to non-compositional VPCs. Following Wurmbrand (2000), this study assumes that compositional and non-compositional VPCs are distinct in structure: compositional VPCs form a SC while non-compositional VPCs form a complex head in their syntactic structure.

2.1.3 Linear order of VPCs

Many factors have been proposed to explain the distribution of the split and non-split orders in VPCs, one of which is the length and complexity of the direct object. Many studies (e.g. Fraser, 1976; Chen, 1986) have suggested that the longer and the more complex the direct object, the more likely it will appear in the non-split order:

(12) a. ?I called [the man who left] up

b. ??The ogre ran [the sweet innocent little children] down

(Fraser, 1976: 19)

The above examples of split VPC in (12a) and (12b) are less natural and frequent than their non-split counterparts. The objects in (12a) and 12b) are modified by a relative clause and an adjectival phrase, consisting of four and five words respectively. This highlights the fact that the longer and the more complex the object, the less likely they are to appear in split VPCs.

Semantic considerations have also been suggested to account for the linear order of VPCs. According to Chen (1986) and Gries (2003), if a particle indicates the direction or goal of a motion, the split order in (13a) is more likely to occur; if a particle contains abstract or non-compositional meaning, the non-split order in (13b) tends to occur:

(13) a. He pushed the chair away

b. He ate up his lunch

Away in (13a) with split order indicates the goal of the motion while *up* in (13b) appearing in non-split order contributes an aspectual meaning of 'completion'. The split order in (13a) highlights the similarities between VPC and [verb+PP] raised by Jackendoff (2002): a particle can be replaced by a PP if the particles denotes a path or goal. Since in [verb+PP] the object appears immediately after the verb and precedes the preposition, in which the surface order is similar to a split VPC, a particle denoting the path or goal may also follow this order and appear in split order.

Apart from these two factors, pragmatic factors such as information status or (in)definiteness of the direct object has also been found to be associated with the split/non-split order in VPCs. Chen (1986) suggested that if the direct object expresses new or unexpected information, non-split order tends to occur. Split order, on the other hand, is more likely to occur if the object carries identifiable information which is already presented in the context:

(14) a. I turn the light on.

b. I turn on a light.

In the above example, the object *the light* in (14a) is not new, as indicated by the

definite article *the*, whereas *a light* in (14b) is new and has not been introduced by the context. According to Chen (1986), those objects which have already presented in the context tend to appear in split order, whereas new information which has not been introduced in the context tends to appear in non-split order.

Some recent studies on the alternate orders of English VPCs adopt a multifactorial approach. Taking all the factors including the length, complexity and information status of the direct object as variables, Gries (2002) conducted a corpus-based study to determine the significance of these factors. The results of her study show that the morphosyntactic variables (including the length/complexity of the object, the grammatical category of the object) are found to be the most powerful ones, followed by semantic variables and pragmatic variables.

2.1.4 Differentiating verb particles, prepositions and adverbs

While the focus of this study is the acquisition of verb particles, it is also of great importance to discuss prepositions and adverbs which are homophonous with particles, since they may affect the development of VPC among bilingual children.

2.1.4.1 Verb particles and prepositions

While many particles are homophonous to prepositions, English VPCs should be

distinguished from verbs followed by prepositional phrases (PP). Consider the following examples from Fraser (1976):

(15) a. She sped up the process.

b. She sped up the pole.

(16) a. The man reeled in the line.

b. The man reeled in the street.

While *sped up* and *reeled in* in (15) and (16) share the same surface form, they are structurally quite different. In (15a), *sped up the process* is a VPC with the verb *sped*, particle *up* and the object *the process*. On the other hand, the structure of *sped up the pole* in (15b) is a verb *sped* plus a prepositional phrase *up the pole*. The most significant difference between these two types of constructions is the word order: while verb particles can precede or follow the object, prepositions can only precede the object:

(17) a. She sped up the process.

b. She sped the process up.

c. She sped up the pole.

d. *She sped the pole up.

(18) a. The man reeled in the line.

b. The man reeled the line in.

c. The man reeled in the street.

d. *The man reeled the street in.

Fraser (1976) suggested that the difference between VPC and verb prepositional phrases lies in the relationship between the preposition and the direct object. A preposition selects a complement to form a prepositional phrase, and thus the preposition and the complement have to be in a local relationship with word order [verb + preposition + complement]. Putting the preposition after the complement as in (17d) and (18d) violates this requirement and leads to ungrammaticality. VPC, on the other hand, do not necessarily require such a local relationship between the particle and the object. The particle either precedes the object as in (17a) and (18a) or follows it as in (17b) and (18b).

2.1.4.2 Verb particles and adverbs

Another word class which shows similarities to verb particles is adverbs. Let's first look at the difference between prepositions and adverbs by considering the following

examples:

(19) a. He climbed up the hill. (Preposition)

b. He climbed up. (Adverb)

Up in (19a) and (19b) indicates the direction in both sentences. The difference between these two examples is the presence verses absence of the complement: while the preposition *up* in (19a) has to select a complement *the hill*, the adverb *up* in (21b) does not select a complement.

Regarding the difference between adverbs and particles, let's look at the following examples:

(20) a. She picked the book up.

b. She picked up the book.

(21) a. She put the book outside.

b. *She put outside the book.

While the particle *up* in (20) can appear in both split and non-split order as in (20a) and (20b) respectively, the adverb *outside* can only appear after the object as in

(21a).

2.2 Cantonese DVCs

Motion events denoted by English VPCs can be represented as directional verb complement constructions (DVCs) in Cantonese, which are a subset of verb complement constructions. Cantonese DVCs consist of a verb, a directional verb functioning as complement and an object. Consider the following example:

(22) a. Non-split Order

舉 起 佢

geoi2 hei2 keoi5

lift rise it

b. Split order

*舉 佢 起

geoi2 keoi5 hei2

lift it rise

(22a) is an example of Cantonese simple DVC. As it indicates, the action

represented by English VPC 'lift up' corresponds to Cantonese *geoi2 hei2* "lift rise" where both *geoi2* 'lift' and *hei2* 'rise' are verbs. The directional verb *hei2* 'rise' functions as a complement to the verb *geoi2* 'lift', indicating the directional meaning of the action. The Cantonese simple DVCs resemble English VPCs in two ways: (i)in form they are compositional since they consist of two elements, a main verb expressing the motion and another free standing main verb expressing the direction/path/goal; (ii) in meaning most of them are generally compositional (corresponding to the compositional English VPCs). However, they exhibit various distinctions. One of them is the ungrammaticality of the English equivalents in (22a). The split order is obligatory if the direct object is a personal pronoun in English VPCs, whereas in Cantonese simple DVCs non-split order is obligatory as in (22a).

2.2.1 Cantonese directional verbs

Cantonese directional verbs are verbs that denote movements with a certain direction. According to Cheung (2007), directional verbs can be classified into two types: Type I *lai4* 嚟 'come' and *heoi3* 去 'go' denote the orientation points toward or away from the speaker; Type II *soeng2* 上 'move up', *lok6* 落 'move down', *ceot1* 出 'move out', *jap6* 入 'move in', *hoi1* 開 'move away', *maai4* 埋 'move close', *hei2* 起 'move up', *dou3* 到 'arrive', *gwo3* 過 'move over', and

faan1 翻 'move back' denote the orientation toward a physical location:

Table 2.1 Cantonese directional verbs

Type I	Type II
lai4 嚟 'come'	*soeng2* 上 'move up'
heoi3 去 'go'	*lok6* 落 'move down'
	ceot1 出 'move out'
	jap6 入 'move in'
	hoi1 開 'move away'
	maai4 埋 'move close'
	hei2 起 'move up'
	gwo3 過 'move over'
	faan1 翻 'move back'

According to Yiu (2005), a directional verb exhibits two uses: namely the directional use and the causative use. In directional use, a directional verb takes a locative object:

(23) 佢入咗房

keoi5 jap6 zo2 fong2

S/he move in ASP room

'S/he moved into the room.'

In (23), the directional verb *jap6* 'move in' specifies an inward movement toward the location *fong2* 'the room'. When the directional verb functions as complement

after a transitive verb, the directional verb also takes a locative object:

(24) 佢攞咗本書入房

keoi5	lo2	zo2	bun2 syu1	jap6	fong2
s/he	take	ASP	CL book	move in	room

'S/he took the book to her room '

In (24), the theme object *bun2 syu1* 'the book' undergoes a movement toward the location denoted by the locative object *fong2* 'the room' brought by the subject. On the other hand, when the directional verb is used causatively, it denotes a change of location or state, with a causer subject and a theme object (Yiu, 2005):

(25) 佢入咗油

keoi5	jap6	zo2	jau2
S/he	move in	ASP	petrol

'S/he caused the petrol to move from the outside to the inside of the petrol tank'

In (25), *jau2* 'the petrol' is the entity that undergoes a change of location caused by the subject. When the directional verb functions as a complement after a transitive verb in causative use, the structure and meaning denoted resemble that of the

English VPCs:

(26) 佢舉起咗本書

keoi5 geoi2 hei2 zo2 bun2 syu1

s/he lift up/rise ASP CL book

's/he lifted up the book'

In (26), the Cantonese main verb *geoi2* 'lift' and the directional complement *hei2* 'up/rise' correspond to the English verb *lift* and the particle *up* respectively. The direct object *bun2syu1* 'the book' in Cantonese DVC occurs after the verb and the complement, just as the non-split order in English VPC *lift up the book.*

Comparing the directional use and causative use of the directional complement, it is observed that the causative use shows similarities with English VPCs in terms of both structure and meaning. In the directional use, a DVC consists of two objects, namely a theme object taken by the main verb and a locative object taken by the directional complement. On the other hand, the directional complement in causative use does not take a locative object, in a way parallel to the English non-split VPCs. In terms of meaning, a DVC in its directional use involves movement of the theme object from a certain location to another location denoted by the locative object, whereas a causative DVC does not encode information about the location. Therefore,

the present study focuses on the causative use of transitive Cantonese DVCs which are comparable to the English DVCs in Cantonese-English bilingual and Cantonese monolingual children. Moreover, since not all Cantonese directional verbs are comparable to English particles, only seven of the Type II directional verbs, namely *soeng2* 上 'move up', *lok6* 落 'move down', *ceot1* 出 'move out', *jap6* 入 'move in', *hoi1* 開 'move away', *hei2* 起 'move up' and *faan1* 翻 'move back' and their combinations with *lai4* 嚟 'come' and *heoi3* 去 'go' as compound complements are examined in this study.

2.2.2 Cantonese simple DVCs

There are two major types of DVCs in Cantonese, namely simple DVCs and complex DVCs. In simple DVCs, the directional complement consists of only one single directional verb, for example:

(27) a. 執 起 佢

zap1 hei2 keoi5

Pick up it

b. *執 佢 起

zap1 keoi5 hei2

pick it up

In (27a), the simple DVC consists of a main verb *zap1* 'pick' and a directional complement *hei2* 'up'. In terms of word order, the verb and the directional verb complement have to be adjacent, with the direct object *keoi5* 'it' coming obligatorily after the directional verb complement as in (27a). (27b) is ungrammatical since the object *keoi5* 'it' occurs between the main verb and the directional complement.

2.2.3 Cantonese complex DVCs

Unlike simple DVCs, the directional complement in complex DVCs contains two directional verbs. According to Cheung (2007), the directional verbs in type II (except *hei2* 起 'move up' and *dou3* 到 'arrive') can combine with *lai4* 嚟 'come' or *heoi3* 去 'go' to form a compound directional verb complement. The DVCs with compound directional complements are termed *complex DVC* in Cheung (2007). For instance, a type II directional complement *ceot1* 'move out' can combine with *heoi3* 去 'go', forming a compound directional complement *ceot1-heoi3* 出去, which means 'move out and away'. The presence of *lai4* 嚟 'come' or *heoi3* 去 'go' indicates a path toward or away from the speaker with respect to the motion. Contrary to the word order of simple DVCs, the object

intervenes between the verb and the compound directional complement:

(28) a. 攞 佢 出 嚟

lo2 keoi5 ceot1-lai4

take it out -come

'take it out here'

b. *攞 出 嚟 佢

lo2 ceot1-lai4 keoi5

take out-come it

In (28a), the pronoun object *keoi5* 'it' appears between the verb *lo2* 'take' and the compound directional complement *ceot1-lai4*, similar to the order of split VPC. Different from simple DVCs, the object cannot follow the compound directional complement as in (28b).

2.2.4 Structure of Cantonese DVC

2.2.4.1 Simple DVCs vs Complex DVCs

The difference between simple and complex DVCs, in terms of surface structure, lies in the directional complements *lai4* 嚟 'come' and *heoi3* 去 'go' which form a

compound directional complement together with another directional complement in complex DVCs. These two directional complements which occur after another directional complement in a compound directional complement provide an orientation point toward (*lai4* 嚟) or away (*heoi3* 去) from the speaker. It is noted that out of the seven Type II directional verbs examined in this study, four of them (*soeng2* 上 'move up', *lok6* 落 'move down', *ceot1* 出 'move out' and *jap6* 入 'move in') cannot occur in the form of simple DVCs. More specifically, when they occur in a transitive DVC (parallel to English DVCs), they appear obligatorily in the form of complex DVCs, forming a compound directional complement with *lai4* 嚟 'come' or *heoi3* 去 'go': V+ *soeng2* 上 'move up'/ *lok6* 落 'move down'/ *ceot1* 出 'move out' / *jap6* 入 'move in' + *lai4* 嚟 'come'/*heoi3* 去 'go':

Table 2.2 Directional complements in Simple and Complex DVCs

Simple DVCs (V+Vd+O)	Complex DVCs (V+O+Vd+ *lai4* 嚟 'come'/*heoi3* 去 'go')
V + *hoi1* 開 'move away'	V + *soeng2* 上 'move up' + *lai4* 嚟 'come'/*heoi3* 去 'go'
V + *hei2* 起 'move up'	V + *lok6* 落 'move down' + *lai4* 嚟 'come'/*heoi3* 去 'go'
V + *faan1* 翻 'move back'	V + *ceot1* 出 'move out' + *lai4* 嚟 'come'/*heoi3* 去 'go'
	V + *jap6* 入 'move in' + *lai4* 嚟 'come'/*heoi3* 去 'go'

Despite the surface word order, the simple DVCs on the left column and the

complex DVCs on the right column differ in terms of internal structure and meaning. Gu (1992) suggests that the Mandarin equivalents of the simple DVCs on the left column in Table 2.2 are a type of resultative compound, where the directional complements expresses a change of location or state/result. The directional complements in simple DVCs specify the direction of the movement denoted by the preceding main verb and indicate the resulting state of the object. For example, in (27a) the object *keoi5* 'it' attains a state of being raised, specified by the directional complement *hei2* 'move up'.

In complex DVCs, *lai4* 嚟 'come' or *heoi3* 去 'go' in the compound directional complement serves as the orientation point from the speaker. Yiu (2005) suggests that the two directional complements, which form a compound with a preceding directional complement, behave like a locative object, specifying whether the goal of the movement is toward or away from the speaker. For example:

(29) a. 拎本書出嚟

ling1 bun2 syu1 ceot1-lai4

take CL book out-come

Take the book (out of here).

b. 拎本書出圖書館

ling1 bun2 syu1 ceot1 tou4syu1gun2

take CL book out library

Take the book out of the library.

In (29a), the position occupied by *lai4* 嚟 'come' can be replaced by a locative object *tou4syu1gun2* 'library' as shown in (29b). Yiu (2005) claims that while the four directional complements *soeng2* 上 'move up', *lok6* 落 'move down', *ceot1* 出 'move out' and *jap6* 入 'move in' indicate the path of movement, *lai4* 嚟 'come' or *heoi3* 去 'go' project the goal which is the location where the movement ends. Yiu (2005) also argues that unlike simple DVCs in which the main verb and the directional complement form a compound, the main verb and the compound directional complements do not form a compound in complex DVC due to the fact that the direct object intervenes between the main verb and the compound directional complement[5].

In sum, despite the difference in the surface word order of the simple DVCs and complex DVCs the two types of DVC in Cantonese also differ syntactically and

[5] Another piece of evidence is that aspectual suffix *zo2* appears after the main verb instead of the compound directional complement:

(1) 拎咗本書出嚟

ling1 zo2 bun2 syu1 ceot1-lai4

take ASP CL book out-come

'(Someone) took the book (out of here).'

semantically, which further complicates the picture in the acquisition of English VPCs and Cantonese DVCs in bilingual children.

2.2.4.2 Insertion of *dak1* and *m4*

While the surface word order in Cantonese DVCs seems to be straightforward without ambiguity[6], the situation becomes complicated with the insertion of the modal marker *dak1* 'can' and negator *m4* 'not'. In such cases, the word order in Cantonese simple DVCs (where the object cannot normally intervene between the verb and the directional complement) can occur in a different order. For instance, a [V-Vd(directional verb complement)] construction appears in the form [V-*dak1*-Vd] in (30a) or [V-*m4*-Vd] in (31a). When a DVC takes a direct object, the two markers may generate a different word order so that the direct object may occur between the verb and the directional verb complement, resulting in [V-*dak1*-NP-Vd] in (30b) and V-NP-*m4*-Vd in (31b):

(30) a. V *dak1* Vd NP

抱 得 起 佢

pou5 dak1 hei2 keoi5

[6] Word order of simple DVCs: Verb + Directional Complement + Object;
Word order of complex DVCs: Verb + Object + Compound Directional Complement.

carry dak1 up him/her

'can carry him/her'

b. V *dak1* NP Vd

抱 得 佢 起

pou5 dak1 keoi5 hei2

carry dak1 him/her up

(31) a. V *m4* Vd NP

抱 唔 起 佢

pou5 m4 hei2 keoi5

carry not up him/her

'cannot carry her'

b. V NP *m4* Vd

抱 佢 唔 起

pou5 keoi5 m4 hei2

carry him/her not up

Without the insertion of *dak1* 'can' or *m4* 'not', the word order in simple DVCs as shown in (32b) is not possible:

(32) a. 抱起佢

pou5 hei2 keoi5

carry up him/her

b. *抱佢起

pou5 keoi5 hei2

carry him/her up

With the insertion of these two markers, two orders are possible as shown in (30) and (31). The crucial difference between the (30a) and (30b), (31a) and (31b) is the placement of the object. The object can be placed either before or after the directional verb complement, resulting in V-*dak1*-NP-Vd and V-NP-*m4*-Vd construction in (30b) and (31b) respectively.

2.2.5 Aspectual meanings in directional complements

Similar to English idiomatic or aspectual VPCs, Cantonese DVCs can also express non-spatial meaning. According to Yiu (2005), the directional complements in DVCs can also express a number of non-spatial meanings such as temporal, social and discourse meanings. For instance, in Chor (2004)'s study on the directional complement *hei2* 'up/rise', she suggests that this directional complement can also

have the inchoative meaning of 'start':

(33) 講 起

gong2 hei2

talk to start

'talk about'

In this example, the directional complement *hei2* means 'to start' instead of 'move up/rise', which is different from its literal meaning. Another example is the directional complement *hoi1* 開 'move away', which can also serve as a habitual marker (Matthews & Yip, 1994):

(34) 飲 開 咖啡

jam2 hoi1 gaa3fe1

drink ASP coffee

'be in the habit of drinking coffee'

2.3 Typological Differences between English VPCs and Cantonese DVCs

2.3.1 Talmy (2000)'s classification of languages

Talmy(2000) proposed a two-way semantic typology of the lexicalization of motion based on how languages express Path. Path is an essential component expressing the direction of a motion event. According to Talmy, languages may be classified into two classes: "satellite-framed" and "verb-framed" languages. In "satellite-languages" (e.g. English), Path is expressed in the form of a "satellite" to the verb. In English, verb particles in VPCs such as in and *out* are typical examples of Path satellites. On the other hand, Path is encoded in the main verb in "verb-framed" languages (e.g. Spanish), where no "satellite" follows the main verb since the Path is already encoded into it.

In Talmy's typology of motion events in different languages, Chinese is classified as a satellite-framed language like English, based on his analysis of DVCs as in the following Mandarin example:

(35) Na4 ge ren2 pao3-jin4 le fang2zi.
That CLF person run-enter PFV house
'That person ran into the house'.

Sentence (35) contains a simple DVC, with the main verb *pao3* 'run' and the directional complement *jin4* 'enter'. Talmy treats the directional complement *jin4*

'enter' as a Path satellite and argues that Chinese Path verbs are satellites since they often do not function as full verbs, just like English particles. However, the classification of Chinese as a satellite-framed language may not capture the nature of Chinese DVC. Slobin (2004) points out that Chinese differs from satellite-frame languages because the so-called satellites in Chinese, unlike English verb particles, are full verbs which can themselves form a predicate.

(36) Ta1 jin4 le fang2zi

He enter PFV house

'He entered the house.'

In fact, many scholars treat the directional complement as a verb independently from its function as a verb complement (Kang 2001, Li 1990, Lu 1977). It appears that neither "satellite-languages" nor "verb-framed" languages can precisely characterize Chinese. With regard to this problem, Slobin (2004) purposed a new category "equipollently-framed languages" to accommodate Chinese and other serial-verb languages. Whatever category Chinese belongs to, the crucial point is that English VPCs and Cantonese DVCs differ structurally, specifically in the properties of two elements: English verb particles and Cantonese directional verb

complements. While the former usually do not function as main verbs when appearing alone, the latter very often can occur alone serving as main verbs. Each of the elements in the two languages gives rise to different word order.

2.3.2 English VPCs vs Cantonese DVCs

As discussed in section 2.2.4.1, the two types of Cantonese DVCs, namely simple DVCs and compound DVCs are structurally and semantically distinct. Comparing both types of DVCs, simple DVCs are more similar to English VPCs structurally as both involve a main verb and another single element specifying the spatial component of the preceding main verb. Complex DVCs, on the other hand, contain one more directional complement than the simple DVCs which indicate the orientation point form the speaker, and such a component cannot be found in English VPCs. Therefore, in terms of structure, the form of simple DVCs corresponds to that of English VPCs. The object of simple DVCs occurs only after the main verb and its complement (V+Vd+O), whereas the object in English VPCs can occur both before and after the particle (V+Prt+O and V+O+Prt). The two constructions in Cantonese and English constitute partial overlap in word order: English VPCs allows two types of word orders whereas Cantonese allows only one of the word order in English VPCs. Cross-linguistic influence is expected to occur in

this area according to Hulk and Müller (2000)'s hypothesis in Cantonese-English bilingual children.

Nevertheless, it is observed that the correspond forms of certain English particles in Cantonese directional complements obligatorily appears in the form of complex DVCs. The corresponding forms of English particles *out* and *in* are *ceot1* 出 'move out' and *jap6* 入 'move in' respectively, where both of them obligatorily occurs in complex DVCs, forming a compound directional complement with *lai4* 嚟 'come' or *heoi3* 去 'go' as indicated in Table 2.2. Table 2.3[7] shows a mapping between English spatial particles and Cantonese corresponding forms:

Table 2.3. English spatial particles and Cantonese corresponding forms

English Spatial Particles	Cantonese directional complements	Others
up	*soeng5-lai4/heoi3* 上嚟/去, *hei2* 起	
down	*lok6-lai4/heoi3* 落嚟/去	*dai1* 低
in	*jap6- lai4/heoi3* 入嚟/去	
out	*ceot1-lai4/heoi3* 出嚟/去	

From Table 2.3, English particle *up* has two corresponding forms in Cantonese: a compound directional complement *soeng5-lai4/heoi3* 上嚟/去 'move up and toward/away' and a simple directional complement *hei2* 起 'rise'. The former focuses on the path and then the goal of a movement, whereas the latter specifies the

[7] Only the English particles that have Cantonese counterparts are listed.

resultative state of the direct object. Similarly, the English particle *down* contains two corresponding forms in Cantonese: a compound directional complement *lok6-lai4/heoi3* 落嚟/去 'move down and toward/away' and another complement *dai1* 低 'down'[8]. Both *hei2* 起 'rise' *dai1* 低 'down' serve as a complement after a preceding main verb and are followed by a direct object, corresponding to the word order of English non-split VPCs.

On the other hand, the English particles *in* and *out* do not have a corresponding form in simple DVCs. More specifically, they only have corresponding forms in compound directional complements which constitute part of the complex DVCs. In the word order of complex DVCs, a direct object intervenes between the main verb and the compound directional complement just like the word order of English split VPCs. As a result, with respect to these two particular particles *in* and *out,* the split-like word order of complex DVCs and the split/non-split word order in English VPCs also constitute a surface partial overlap: Cantonese complex DVCs appears in one of the word orders permitted in English VPCs. This surface partial overlap is in opposite to the one discussed earlier[9]. Therefore, we may expect the developmental patterns of the English particles *in* and *out* differ from other particles. The word order of English VPCs with particles other than *in* and *out* (non-split order as partial

[8] The Cantonese complement dai1 behaves like a simple directional complement, occurring after the main verb and expresses the resultative state of the preceding main verb.

[9] The surface partial overlap discussed earlier is the non-split word order constituted by Cantonese simple DVCs and English non-split VPCs.

overlap) may be different from English VPCs with particles *in* and *out* (split order as partial overlap).

2.4 Summary

Concluding this chapter, we may observe that English VPCs and Cantonese DVC show partial overlap in the word order: English VPCs allow two surface orders, namely split and non-split order, whereas its corresponding form, simple Cantonese DVCs allow non-split order only (except with the insertion of *dak1* or *m4*). However, the properties of these constructions contrast in a number of ways including their structure and meanings, which make the acquisition of the two constructions more complex and challenging:

(a). The split/non-split order of English VPCs is subject to various factors such as the length/complexity and information status of the direct object. For Cantonese, non-split order is obligatory for simple DVCs and split order is obligatory for complex DVCs.

(b). A personal pronoun cannot occur as object in the non-split construction in English, whereas a personal pronoun object can and must do so in a non-split simple DVC in Cantonese.

(c). While the English particles are homophonous to prepositions or adverbs, Cantonese directional verb complements can function as main verbs indicating the motion and direction in an action.

(d). Both Cantonese DVCs and English VPCs can express spatial as well as non-spatial meanings. However, while the meanings in Cantonese DVCs are usually compositional, the meanings in English idiomatic VPCs cannot be determined from the literal interpretations of the verb and the particle, showing varying degrees of compositionality.

(e). Cantonese simple DVCs and complex DVCs are different structurally and semantically. English VPCs and simple DVCs show a higher degree of similarity in terms of structure and meaning. However, the English particles *in* and *out* do not have a corresponding form in simple DVCs and their corresponding forms have to appear in complex DVCs.

Given these contrasts in the two target languages, the following questions are raised in the acquisition of English VPCs and Cantonese DVCs in bilingual children:

(i) What is the word order of English VPCs and Cantonese DVCs (split or non-split) in Cantonese-English bilingual children? What are the similarities

and differences in the developmental patterns in bilingual and monolingual children?

(ii) Given the structural differences between English verb particles and Cantonese directional verb complements, how do Cantonese-English bilingual children acquire these two constructions with different word orders and constraints?

(iii) Are there any non-target forms in the course of acquiring English VPCs and Cantonese DVCs that are only found in bilingual children? What are the implications of these forms?

(iv) Based on the differences in the developmental patterns between bilingual children and their monolingual counterparts, what is the nature and directionality of language transfer? Most importantly, if cross-linguistic influence occurs, which factors, namely structural overlap, language dominance and parental input, can account for its occurrence?

Chapter Three The acquisition of English VPCs in monolingual and bilingual children

In this chapter we review previous studies on the acquisition of English VPCs in monolingual and bilingual children. Meanwhile, since no research has been done on the acquisition of Cantonese DVCs, we will look at the acquisition of Mandarin DVCs, which have a structure similar to those in Cantonese. The results of these studies enable us to compare the development of VPCs with bilingual children, and more importantly, to see if cross-linguistic influence could be identified based on performance difference between monolingual and bilingual children.

To begin with, let's take a look at the general pattern of the acquisition of English VPCs among monolingual children. With respect to the order of acquisition, it is generally observed that the split construction emerges before the non-split construction. Hyams et al. (1993) and Broihier et al. (1994) show that the split order is acquired prior to the non-split order. Using data from twelve children in CHILDES, Snyder and Stromswold (1997) found that while four children acquired the two constructions at approximately the same time, the remaining eight children acquired the split order before the non-split order. In terms of frequency, it is found that the most dominant construction type is the split construction (Snyder & Stromswold, 1997; Dissel & Tomasello, 2005, among others). In Diessel and Tomasello (2005)'s study on VPC in early child English, 93.5% of the VPCs are

split V-NP-Prt construction. They attribute the high percentage of split orders to the high frequency of spatial/directional particles which tend to follow the direct object. In the following section, we will review several studies that focus on the acquisition of English VPCs.

3.1 Snyder (1995, 2001) The Compounding Parameter on acquisition of VPCs

Snyder (1995) has proposed *the Compounding Parameter* for the acquisition of complex predicates under the principles-and-parameters approach to language acquisition (e.g., Chomsky 1981; Chomsky & Lasnik 1993). Under this approach, children are born with knowledge of linguistic principles and a limited number of parameters which constrain the range of variation that languages exhibit with respect to the principles. A parameter is said to be "set" in the language learner when clear triggers are encountered in the linguistic input, and this setting may in turn trigger the acquisition of a cluster of other related grammatical structures.

In relation to VPCs, Snyder (1995, 2001) hypothesises the *Compounding Parameter* in accounting for the relationship between the acquisition of VPCs and N-N compounds. According to this parameter, languages permit complex predicates such as VPCs and double objects if and only if they allow the formation of N-N compounds (Snyder 1995, 2001):

"A language permits the English-style verb-particle construction only if it allows speakers to freely create novel, endocentric root compounds[10]."

Snyder assumes that there is some kind of grammatical connection between VPCs and compounding. In English, though the VPCs do not behave as morphological compounds, Snyder reasoned that the verb and the particle might form a compound at some point earlier or later in the syntactic derivation, or that they may in some way bear a relationship that is similar to the relationship between the parts of a compound.

Snyder tests this *Compounding Parameter* in two ways: cross-linguistic variation and child language acquisition. For cross-linguistic variation, he examined a range of languages to see whether those languages which employ morphologically separate particles permit the free creation of novel endocentric root compounds. Results showed that the languages he examined with a separable-particle construction allow the free creation of novel root compounds, but not the other way around. However, he has only examined 12 languages and it is still unclear whether

[10] A root compound is considered as "endocentric" if one of the roots functions as the head of the compound. For instance, the compound *football is* endocentric since the root *ball* is the head which determine the whole compound to be a noun instead of a preposition. One the other hand, *redhead* is an exocentric compound because it refers to a type of person with red hair, but not a type of head which is red in colour.

all, or even the majority of languages in the world show this pattern. Moreover, the way he arrived at the generalization, by consulting native speakers to interpret certain expressions in their own languages, may not capture the insights of these languages fully. For instance, he characterized both English and Chinese as languages allowing endocentric root compounds, and according to the *Compounding Parameter*, both languages would permit the English-style VPCs. On the other hand, we have already demonstrated that English VPCs and Cantonese VPCs are indeed different in a number of ways including word order and constituents in the previous chapter, posing challenges for bilingual children to acquire these two structures. This parameter to a certain extent minimizes the differences in properties between languages.

In child language acquisition, Snyder (1995) studied the acquisition of VPCs and Noun-Noun (N-N) compounds in monolingual English children. He showed that there is a strong correlation between the age at which children acquire VPCs and the age at which children become productive with N-N compounds. Acquisition data in Japanese also seem to be consistent with the predictions of this parameter (Miyoshi 1999).

It is still unclear whether cross-linguistic variation justifies this parameter due to the relatively small sample of languages investigated. In addition, the question of

whether the acquisition of VPCs will always correlate with the acquisition of N-N compounding still needs more cross-linguistic acquisition data to serve as supporting evidence. More importantly, the *Compounding Parameter* may oversimplify the cross-linguistic variation. In Snyder's cross-linguistic survey of particles and compounds, he claimed that Mandarin, in which DVCs behave similarly to Cantonese, permits separable particles and thus also allows free creation of novel, bare-root endocentric compounds just like English, implying that English VPCs and Cantonese DVCs behave quite similarly with regard to this parameter. However, it is difficult to judge whether Cantonese permits English-style VPCs since English verb particles and Cantonese directional verb complement have different properties (as we have seen in Chapter 2): the former are homophonous to prepositions or adverbs, while the latter can serve as main verbs. Moreover, the degree of productivity of bare-root endocentric compounds may also differ in different languages. For these reasons, we will not look at the correlation between acquisition of VPCs and N-N compounding in this thesis.

3.2 Sawyer (2001)'s study of acquisition of English VPCs in monolingual children

Studying the syntax as well as the acquisition of English VPCs, Sawyer (2001)

compares the development of compositional and non-compositional VPCs in three English monolingual children. In the first part of her study, she categorizes English VPCs into two types: adverb construction (VAC, or compositional VPC) containing a verb, an object and an adverb; a (non-compositional) "VPC" with a verb, an object and a particle. The difference of the two can be illustrated as follows:

(1) a. The cowboy shot up the bullet. (adverb)

b. The cowboy shot up the saloon. (particle)

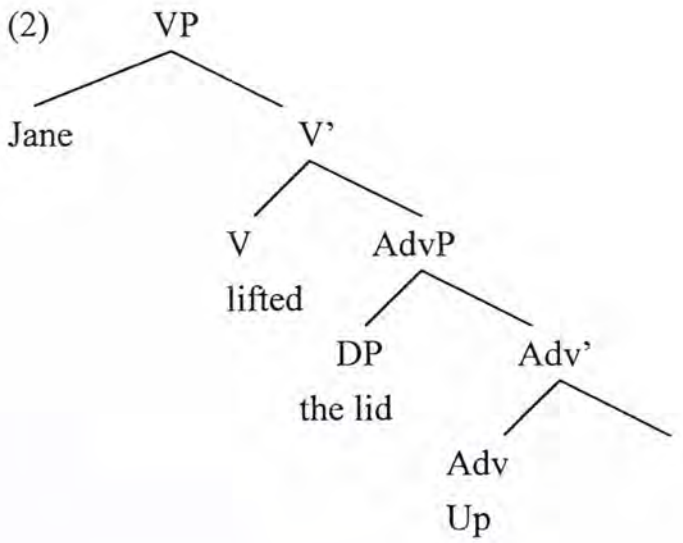
(Sawyer 2001: 122)

In (1a), *up* specifies the path of the motion which is upward, and describes the position of *the bullet.* On the other hand, in (1b) *up* forms a unit with the verb and creates the meaning 'cause a commotion', which is not derived compositionally from the verb and the particle.

Sawyer's results show that the monolingual English children go through an initial stage where compositional VPCs are more frequent than non-compositional VPCs. During this stage, the split order is predominant. She further reports that children treat these two types differently in terms of their errors made: more errors are found in compositional VPCs than that in non-compositional VPCs. More

crucially, children treat the two types of VPCs differently in terms of the percentage of object omission: an overwhelming object omission rate (79%) is found in compositional VPCs. In addition, the age where the children omit the object corresponds to a stage where the monolingual children tend to drop the subject. More specifically, there is a stage where the children omit the both the subject in an utterance and the object in compositional VPCs. Due to this reason, Sawyer suggested that the monolingual English children treat the apparent complement (in object position) in the compositional VPC as the subject of the VPC, thus dropping the object as a subject during the null subject stage, which results in a stage where both the object in compositional VPCs and subject in an utterance tend to be dropped. She proposed an underlying structure for the compositional VPCs (Sawyer 2001: 137):

(2)



In this structure, the particle alone is phrasal and she suggested that monolingual children took the apparent complement "the lid' as its subject. According to Sawyer, this structure can account for the development patterns of compositional VPC in monolingual children. Firstly, the underlying order of this structure is the split order, which can capture the fact that the split order of compositional VPCs is usually acquired before the non-split order. Secondly, the structure assumes that the verb and the particle are compositional, allowing them to be combined freely. If children understand the meaning of the verb and particle, they would be able to combine them easily. This can account for the early occurrence and high frequency of compositional VPCs. For the frequency of object omissions, Sawyer hypothesized that children treat the apparent complement (direct object) in compositional VPCs as the subject of the particle phrase AdvP ("adverb phrase" in Sawyer's study), thus dropping the complement (the VPC direct object) as subject during the null-subject stage.

Sawyer's study demonstrates the necessity of separating compositional and non-compositional VPCs in the acquisition of VPCs due to their structural difference. This may shed light on our research questions since the English compositional VPCs exhibit a higher degree of similarity to Cantonese DVCs, whereas English non-compositional VPCs seem to share fewer similarities with

Cantonese DVCs. However, it is not clear whether the high frequency of object omission in English compositional VPCs is due to the fact the monolingual children treat the object as subject in the particle phrase. It is possible that monolingual children tend to omit object in all transitive verb constructions regardless of whether the construction associated is a VPC or not. A comparison between the object omission rate in VPCs and transitive verbs may be helpful to understand the principle reason for high frequency of object omission in English VPCs.

3.3 Diessel and Tomasello (2005)'s study on acquisition of VPCs

Diessel and Tomasello's corpus study investigated whether the acquisition of VPC ordering in monolingual English children is shaped by the same factors as in adult language. They conducted a multifactorial analysis taking into account six linguistic variables which are found to be correlated with VPC ordering in adult language. These six linguistic variables include:

1. The length of the direct object
2. The complexity of the direct object
3. The NP type of the direct object (Personal pronouns, other pronouns or lexical NPs)

4. The meaning of the particle (Spatial vs Non-spatial)
5. The (in)definiteness of the direct object
6. The presence of a directional adverbial in the position of the particle

Results show that four of the six factors examined vary with the VPC order for monofactorial analysis, namely the length of direct object, the complexity of the direct object, the NP type of the direct object and the meaning of the particle. With respect to the multifactorial analysis, only two factors are found to be significant: the NP type of the direct object and the meaning of the particle. These results suggest that children are sensitive to some of the features (the NP type of the direct object and the meaning of the particle) that motivate VPC ordering in adult speakers.

It would be interesting to see whether Cantonese-English bilingual children behave differently from their monolingual counterparts in this aspect since properties of Cantonese DVCs may have influence on the linguistic variables discussed above. Of the six factors, four concern the characteristics of the direct object: the length, the complexity, the meaning and (in)definiteness; and one is about the properties of the particle. For Cantonese DVCs, the nature of the direct object does not have an effect on the ordering. The determining factor is whether the DVC is simple (non-split) or complex (split), i.e., whether the verb is followed by a

simple directional complement or a compound directional complement. In compound directional complement, *lai4* 嚟 'come' (toward the speaker) and *heoi3* 去 'go' (away from the speaker), which encode the orientation point toward/away from the speaker, is attached to a particular directional complement. It is predicted that the meaning of the particle, rather than other factors concerning the nature of object, is more influential for Cantonese-English bilingual children's ordering of VPCs if transfer takes place from Cantonese to English.

3.4 Yip and Matthews (2007)'s study on acquisition of VPC in bilingual children

Yip and Matthews (2007) conducted an analysis of the development pattern of the split/non-split English VPCs in six Cantonese-English bilingual children including four Cantonese-dominant and two non-Cantonese-dominant children. The results are summarized in the following two tables:

Table 3.1 Distribution of lexical NPs and pronouns in four Cantonese-dominant bilingual children's English verb-particle constructions

Child	Timmy	Sophie	Alicia	Llywelyn	Total
V-NP-PRT (split order)	5	0	1	0	6
V-PRT-NP (non-split order)	12	5	6	4	27
% non-split	70.6	100	85.7	100	81.8
V-pronoun-PRT (split order)	22	7	0	11	40
V-PRT-pronoun (non-split order)	0	10	1	2	13
% non split	0	58.9	100	15.4	24.5

(Yip and Matthews 2007:221)

Table 3.2 Distribution of lexical NPs and pronouns in two non-Cantonese-dominant bilingual children's English verb-particle constructions

Child	Charlotte	Kathryn
V-NP-PRT (split order)	7	16
V-PRT-NP (non-split order)	5	0
% non-split	41.7	0
V-pronoun-PRT (split order)	20	21
V-PRT-pronoun (non-split order)	11	1
% non split	35.5	4.5

(Yip and Matthews 2007:221)

Table 3.1 shows the distribution of lexical NP and pronoun objects in VPCs in Cantonese-dominant bilingual children. Each bilingual child produces more than 70% of their VPCs with lexical NP objects in non-split order, with an average of 81.8%. This percentage is much higher than the monolingual English children who produce less than 10% of their VPCs in non-split order. For VPCs with pronoun objects, three out of four bilingual children produce non-target forms where the pronoun appears in non-split order, one such example is demonstrated as follows:

(3) wake up me. [Sophie 2;05;16]

Such a non-target structure has never been reported among monolingual English

English children. It reflects transfer from the Cantonese simple DVC where objects including pronouns must occur in a non-split fashion.

Table 3.2 shows the distribution of lexical NP and pronoun objects in VPCs in two non-Cantonese-dominant bilingual children. While Kathryn shows a similar pattern to the monolingual English children, producing all VPCs with lexical NP in the split order, Charlotte produces only 41.7% of them in non-split order, which is a great contrast in performance between the two bilinguals. Moreover, both Charlotte and Kathryn produce non-target structures where a pronoun object occurs in a non-split VPC. These results imply that even one of the non-Cantonese-dominant bilingual children (Charlotte) behaves differently from the English monolingual, though the difference may not be as striking as in the Cantonese-dominant bilingual children.

Overall, the data shows that both the Cantonese-dominant and non-Cantonese-dominant bilingual children behave differently from English monolingual children in terms of the percentage of split/non-split order in VPCs with lexical NP vs pronoun objects. Yip and Matthews suggest that the difference in developmental pattern between monolingual and bilingual children can be attributed to language transfer from Cantonese, regardless of the degree of language dominance.

Yip and Matthews (2007)'s study clearly demonstrates the difference between English monolingual children and Cantonese-English bilingual children with respect to the developmental patterns of English VPCs. In this thesis, we will also look at the acquisition of Cantonese DVCs, the counterpart of English VPCs, in both monolingual Cantonese children and Cantonese-English bilingual children. The data from Cantonese will help us to understand more about the nature and directionality of language transfer, i.e., whether language transfer occurs from English VPCs to Cantonese DVCs.

Although much attention has been placed on Chinese verb compounds, not much has been done regarding the acquisition of DVCs in Mandarin and Cantonese. Chen (2005) investigated the acquisition of two types of verb compounds in Mandarin. The verb compounds he examined in Mandarin-speaking children include DVCs and resultative verb complement constructions (RVCs) using an elicitation task. The study mainly focuses on the form and meaning mapping of events and the productivity of verb compounding in monolingual Mandarin-speaking children. His results show that Mandarin-speaking children acquire the combinatorial nature of verb compounds by around age 2;6, producing different types of verb compounds productively. In this thesis, we will not look at constraints or productivity of Cantonese DVCs which lie beyond our present scope of investigation. Instead, we

will focus on the acquisition of the word order in directional verb complements in both monolingual and bilingual children to see if the two groups of children show different developmental patterns.

3.5 Summary

Many studies have found that monolingual English-speaking children produce split VPCs much more frequently than non-split VPCs. Yip and Matthews (2007) reported differences in word order in the acquisition of VPCs between monolingual English-speaking children and English-Cantonese bilingual children, where bilingual children tend to produce non-split VPCs in English much more frequently than monolingual children. While extensive research has been done on the acquisition on English VPCs, little has been done on the acquisition of Cantonese DVCs. In order to capture the differences in the development of English VPCs and Cantonese DVCs among Cantonese-English bilingual children and their monolingual counterparts, we also investigate the acquisition of Cantonese DVCs in both monolingual and bilingual children, focusing on their word order alternations.

Chapter Four Hypotheses and Methodology

This chapter discusses the hypotheses and manifestations of cross-linguistic influence in the acquisition of English VPCs and Cantonese DVCs in Cantonese-English bilingual children. According to the conditions of structural overlap proposed by Hulk and Müller (2000) for cross-linguistic influence, the word order in English VPCs and Cantonese DVCs is shown to satisfy this condition and cross-linguistic influence is predicted to occur in this domain. Predictions are made based on properties of these two constructions. The methodology used in the study is also presented in this chapter.

4.1 Acquisition of English VPCs

As noted in chapter 2, English transitive VPCs consist of three elements: a transitive verb, a direct object and a verb particle which is homophonous to prepositions/adverbs. In order to produce a compositional VPC, the verb and the particle need to be combined appropriately: the particle specifies the directional/spatial or aspectual information with respect to the verb. The next step is to choose between the split and non-split order. In the literature there are still no clear criteria for the choice of a particular order[11]. For the syntactic structure of

[11] As noted in Chapter 2, the choice of split and non-split order of English transitive VPCs can be attributed to a range of factors, such as the structure/length and the information status of the direct object.

VPCs, the small clause approach favours the split order as underlying order whereas non-split order appears to be the underlying order under the complex verb head approach. As pointed out by Gries (2002)'s statistical study, many factors such as length/complexity of the direct object, idiomacity of the VPCs are taken into account and it seems that none of these factors alone can account for the alternation in word order.

Although the motivations for the ordering and underlying structures of VPCs are controversial in the linguistic literature, the developmental pattern of English VPCs in monolingual children turns out to be quite clear. It is generally found that monolingual English-speaking children produce the split VPCs before the non-split VPCs, and the majority of the VPCs they produce (more than 90%) are in the split order (Sawyer, 2001; Diessel and Tomasello, 2005) in a way which is similar to adults' VPCs. On the other hand, the word order in Cantonese DVCs follows a pattern where simple DVCs occur in non-split order and complex DVCs in the split order. In terms of structure, Cantonese simple DVCs are more similar to English VPCs since both of them consist of a main verb and a particle (English) or simple complement (Cantonese). Cantonese complex DVCs contain an extra element encoding the orientation from the speaker's perspective, forming a

Verb-Complement-Complement[12] structure, which is different from that of the English VPCs. While English VPCs allow both split and non-split orders, Cantonese simple DVCs only allow the non-split order. With the surface overlap of English VPCs (split or non-split order) and Cantonese simple DVCs (non-split order only), we may expect our bilingual children to produce more non-split English VPCs than monolinguals if there is cross-linguistic influence from Cantonese. Moreover, if structural overlap is the only factor causing the cross-linguistic influence, it is expected that the directionality of the influence is from Cantonese to English but not the other way around. If cross-linguistic influence occurs in both directions, factors other than structural overlap should account for the effect.

Yip and Matthews (2007) show that six Cantonese-English bilingual children produce a higher percentage of non-split VPCs in English than monolingual children. Certain non-target forms of English VPCs which have never been reported in monolingual children are found in these bilingual children. We will extend the study to include one more bilingual child, Janet, and explore a total of seven bilingual children's development in depth. Other factors such as the age of first emergence and the frequency of verb particles will also be examined to see if there is any other evidence of cross-linguistic influence with respect to English VPCs. We may also

[12] As discussed in Chapter 2, the complement-complement combination is a case of compound directional complement.

expect to see non-target forms which are based on the surface structure of Cantonese DVC produced by bilingual children

4.2 Acquisition of Cantonese DVCs

In order to acquire Cantonese DVCs, children need to know how to combine a verb and a directional verb complement which may also serve as a main verb in other contexts. There are two types of Cantonese DVCs, namely the simple DVCs (in non-split order) and complex DVCs (in split order). The ordering in Cantonese DVCs is purely structural and does not involve any pragmatic considerations. Unlike English, there is no order alternation in Cantonese DVCs: simple DVCs cannot occur in split order and complex DVCs cannot occur in non-split order. According to Hulk & Müller (2000)'s structural overlap hypothesis, cross-linguistic influence will not occur from Cantonese DVCs (which allow only one structural option) to English VPCs (which allow two structural options). We will address the question whether the direction of influence is unidirectional (from Cantonese to English) or bidirectional in light of the predictions of the structural overlap hypothesis.

Another difference between Cantonese DVCs and English VPCs involves the properties of the Cantonese directional complement and English particle. While English particles can only appear after a verb in VPCs, a Cantonese verb directional

complement can occur either as a main verb on its own or as a complement after a verb parallel to a particle in English VPC. This partial overlap in the position of English verb particle and Cantonese directional verb complement may be one of the motivations for cross-linguistic influence to take place. We may expect the bilingual children to behave differently from Cantonese monolinguals: bilingual children may produce directional verbs as main verbs less frequently than monolingual children due to the influence from English particles which could appear only as particles but not main verbs.

4.3 Language dominance

As we have discussed in Chapter 1, language dominance is also one of the factors that may play a role in cross-linguistic influence. There are five Cantonese-dominant children and two non-Cantonese-dominant children in our study. One of the non-Cantonese dominant children (Charlotte) is dominant in English, and Kathryn is relatively balanced in both languages. If language dominance was the only factor that plays a role in determining cross-linguistic influence, we would expect to see cross-linguistic influence occur among unbalanced children only, and the direction of influence would be from the dominant language to the non-dominant language. While the five Cantonese-dominant bilingual children may perform differently from

monolingual children in the domain of English VPC, the non-Cantonese-dominant bilingual children should not show cross-linguistic influence and perform more like English monolinguals. In the domain of Cantonese DVC, we expect Cantonese bilinguals to perform similarly to their monolingual counterparts, whereas the English-dominant bilingual may show influence from English VPCs. More specifically, Cantonese-dominant bilinguals are expected to produce more non-split English VPCs than non-Cantonese-dominant bilinguals. As for Cantonese DVCs, English-dominant bilinguals may produce non-target forms of simple DVCs and complex DVCs

4.4 Parental input

As mentioned in Chapter 1, language external factors such as parental input bilingual children received may also play a role in cross-linguistic influence. A parental input analysis is carried out in two of the bilingual children, Alicia and Janet, who are both Cantonese-dominant. Input from their fathers is compared to their production of English VPCs. If parental input has an effect on cross-linguistic influence, we should see a correspondence between the word order in the target constructions produced by the parents and their children: the VPC word order in the bilingual children might be similar to that in the parental input.

4.5 Multifactorial analysis of the choice of VPC order

Diessel and Tomasello (2005) conducted a study of the multiple factors affecting the choice of VPC order in monolingual English-speaking children. A similar multifactorial analysis is also done on the seven bilingual children in this study. It is hypothesized that the factors playing a role in determining the VPC order might be different in bilingual children if cross-linguistic influence occurs: factors associated with the properties of the particle might be more significant than those associated with the properties of the object in determining VPC order. This is because in Cantonese the properties of the object play no role in DVC word order. While monolingual children are sensitive to both the properties of the object and the particle, the bilingual children are predicted to be more sensitive to the properties of the particle instead of the object.

4.6 Methodology

This thesis investigates the longitudinal development of seven Cantonese-English bilingual children from the Hong Kong Bilingual Child Language Corpus (Yip and Matthews, 2007) and eight monolingual Cantonese-speaking children from the Hong Kong Child Language Corpus (CANCORP) (Lee et al. 1996). Both corpora are

available in the CHILDES archive (MacWhinney, 2000). Background information of the bilingual children is provided below.

4.6.1 Subjects

4.6.1.1 Cantonese-English Bilingual Children: The Hong Kong Bilingual Child Language Corpus (Yip & Matthews, 2007)

The Hong Kong Bilingual Child Language Corpus contains longitudinal data from seven children who come from one-parent-one-language families and have been exposed to Cantonese and English regularly from birth. The children were recorded weekly or biweekly covering the age range between 1;03 and 4;06.

Among the seven bilingual children, five are dominant in Cantonese, one is dominant in English and one is relatively balanced in both languages, (Yip and Matthews, 2007). This combination of different language dominance patterns allows us to investigate the role of language dominance in cross-linguistic influence. It is noted that 3 of 5 Cantonese-dominant children (Timmy, Sophie and Alicia) are siblings in the same family. An overview of the age span and the number of recordings covered by the analysis is provided in the following table:

Table 4.1 Age span and the number of recordings in the seven Cantonese-English bilingual children

Child	Timmy	Sophie	Alicia	Llywelyn	Janet	Kathryn	Charlotte	Total
Age	2;01;22-3;06;25	1;06;00-3;00;09	1;03;10-3;00;24	2;00;12-3;04;17	2;00;16-3;01;11	3;01;05-4;06;07	1;08;28-3;00;03	
Number of Cantonese files	35	40	40	17	22	17	19	168
Number of utterances in Cantonese files	10,631	12,574	6,271	3,831	5,106	4,281	4,012	41,546
Number of English files	38	40	40	17	22	17	19	171
Number of utterances in English files	6,241	6,717	5,109	4,121	5,043	4,202	4,621	31,011

(Based on Yip and Mathews, 2007)

4.6.1.2 Monolingual Cantonese-speaking children: The Hong Kong Cantonese Child Language Corpus(CANCORP) (Lee et al., 1996)

The Hong Kong Cantonese Child Language Corpus contains data from 8 Cantonese monolingual children covering the age range from 1;05 to 3;08. All the children were born to Cantonese-speaking parents and spoke Cantonese as their first language. 2 of the 8 children may have received occasional English input since they were also taken care of by a Filipino helper. Each child was recorded on a biweekly basis. An overview of age range and number of sessions is summarized in the following table:

Table 4.2 Age span and the number of recordings in the eight Cantonese monolingual children

Child	Bohuen (wbh)	Gakei (cgk)	Bernard (mhz)	Tsuntsun (ckt)	Tinfaan (ltf)	Johnny (hhc)	Jenny (lly)	Chunyat (ccc)
Age	2;03;23-3;04;08	1;11;01-2;09;09	1;07;00-2;08;06	1;05;22-2;07;22	2;02;10-3;02;18	2;04;08-3;04;14	2;08;10-3;08;09	1;10;08-2;10;27
No. of files	27	19	26	25	16	16	20	22

4.6.2 The bilingual data

The data which we analyze in this study is based on the bilingual children's spontaneous utterances which are not imitations of adult productions. Self-repetitions were also included when the bilingual child intended to facilitate better understanding.

One of the limitations of naturalistic data is that the frequencies of certain grammatical structures are relatively low. A case in point is the frequency of VPCs in Cantonese-English bilingual children, which is much lower than in the monolingual English-speaking children, making it difficult to compare VPCs in bilingual children with English monolinguals. Both age and mean length of utterance (MLU) are used as measures to compare with the production of VPCs among the bilingual children. However, the discrepancies between the two, as well as the low frequency of the occurrences of VPCs, indicate that neither of them is a good measure for comparison across the sample. We will not look at the

development of VPCs and DVCs over time in this study. On the other hand, the total number and percentage of different types of VPCs across all the files within each individual bilingual child are calculated to compare with the development of VPCs in monolingual children. Moreover, age of first non-imitative use of the relevant structures is also used as a reference for the development of VPCs.

4.6.3 Analysis

4.6.3.1 Classification of utterances in English VPCs

The first set of findings reported in this study concern the word order of English VPCs. Related issues such as object omission or other non-target forms are also considered as long as they are relevant to the development of VPCs. As a first step, we searched and extracted all the utterances which include verb particles using CLAN. These particles include *up, down, in, off, in, out, back, away, over* and *around,* which are also analyzed in monolingual children (Diessel & Tomasello, 2005; Sawyer, 2001). Since they may occur in different constructions apart from VPCs due to the fact that some of them are homophonous to prepositions or adverbs, we classify these utterances into five categories following Diessel and Tomasello (2005):

1. Transitive VPCs, consisting of a transitive verb, a verb particle, and a direct object.

   e.g. I picked Julie up.

2. Intransitive verb particle constructions, consisting of an intransitive verb and a particle.

   e.g. I fall down

3. Predicative verb particle constructions, consisting of the copula *be* and a particle.

   e.g. It is down

4. Fragmented particle constructions, consisting of a noun and a particle or an isolated particle in a one-word utterance.

   e.g. Down!

5. Prepositional constructions, consisting of a prepositional phrase that may or may not be embedded in a clause.

   e.g. Put it in the bag.

The English VPCs extracted from the bilingual data are further classified into two categories: target and non-target constructions. Constructions of split and non-split VPCs with lexical NP obejct and split VPCs with pronoun objects belong to the target category:

(i) a. V-Particle-NP: Take off the ballet (Charlotte 2;01;22)

b. V-NP-Particle: Knock the key out (Kathryn 3;09;25)

c. V-Pronoun-Particle: Put it down (Sophie 2;03;24)

Utterances that fall into the non-target category will be further classified as belonging to one or more of the following subcategories:

(ii) a. V-Particle-Pronoun: you turn off it (Charlotte 2;02;06)

b. Omission of object: I want take off (Alicia 2;04;24)

c. Others: when I came him out , Mummy tumble driver . (Kathryn 4;01;09)

In order to make a better comparison between monolingual and bilingual children, target transitive VPCs are coded based on Diessel and Tomasello (2005)'s study in six areas:

Table 4.3 VPC coding

Variable		Coding
Length of the direct object	1 words	1
	2 words	2
	3 words	3
	4 or more	4
Complexity of the direct object	Simple NP	S
	NP consisting an adjective	I
	NP including a relative clause	C
NP type of the direct object	Personal pronouns	PPro
	Other pronouns	OPro
	Lexical NPs	L
Meaning of the particle	Spatial	S
	Non-spatial	NS
Occurrence of a definite or indefinite determiner	Definite determiner	D
	Indefinite determiner	InD
	No determiner	X
Occurrence of a directional adverbial following the VPC	With a directional adverbial following the VPC	Adv
	Without a directional adverbial following the VPC	XAdv

4.6.3.2 Classification of utterances involving Cantonese VPCs

We searched and identified seven directional verbs *soeng5*(上) "up", *hei2*(起) "up", *lok6*(落) "down", *ceot1*(出) "out", *jap6*(入) "in", *hoi1*(開) "away", *faan1*(返) "back" and two other particles *dai1*(低) "down" and *zau2*(走) "away" which are comparable to the English verb particles discussed in the previous sections in both form and meaning.

In the first step, all utterances containing the target directional verbs are

extracted. They are classified as either functioning as a main verb alone or a directional complement in a DVC. Utterances in Cantonese DVCs are further classified into two major classes: simple DVCs and complex DVCs:

Simple DVCs: V-Prt-NP (Non-split)

(1) 我 擺 開 嗰 個 (Timmy 2;02;20)

ngo5 lo2 hoi1 go2 go1

I take away that one

"I take away that one"

Complex DVCs: V-NP-Prt1-Prt2 (Split)

(2) 擺 個 繩 出 嚟 先 (Kathryn 3;03;16)

lo2 go3 sing2 ceot1-lai4 sin1

take CL rope out-come first

"Let me take out the rope"

Within each category, cases of topicalization of the object, DVCs with a null object and non-target forms are also counted since they are crucial in revealing how the bilingual children produce the Cantonese DVCs:

Topicalization of object

(3) 你 啲 片 又 攞 出 嚟 (Alicia 3;00;24)

lei2 di1 pin2 jau6 lo2 ceot1-lai4

your some video again take out-come

"You take out your videos again"

According to Matthews and Yip (1994), topicalization refers to the placement or a word/phrase at the beginning of an utterance or a clause. In this study, topicalization of object refers to the cases where the direct object in a transitive DVC is topicalized. In (3), the direct object *lei2 di1 pin2* 'your video' of the main verb *lo2* 'take' is toplicalized and occurs in the initial position of the utterance.

Null-object DVC:

(4) 我 要 攞 出 嚟 (Alicia 3;00;24)

ngo5 jiu3 lo2 ceot1-lai4

I need take out-come

"I need to take (it) out"

In (4), since the direct object position is null, the compound directional complement *ceot1lai4* 'move out and toward' comes immediately after the main verb *lo2* 'take'. Since this study focuses on the direct object of the main verb and its word order, locative objects are not included in the analysis.

Non-target forms:

Non-split order in Complex DVC:

(5) 我 攞 出 嚟 呢 個 可 唔 可以 呀 ? (Alicia 3;00;24)

ngo5 lo2 ceot1-lai4 lei1 go3 ho2 m4 ho2 ji5 aa1?

I take out-come this CL can not can SFP

"May I take out this one?"

Other non-target forms:

Omission of directional complement in complex DVC:

(6) 係 呀 攞 啲 種子 落 (Kathryn 3;04;14)

hai6 aa1 baai2 di1 zung2 zi2 lok6

yes SFP put some seed down

"Yes, put some seeds down there."

These structures will be further discussed in the next Chapter.

4.7 Summary

In this beginning of this chapter (Section 4.1-4.5) we have formulated the hypotheses for this study, identifying possible domains of cross-linguistic influence based on structural overlap between the two languages. We have also discussed the role of language dominance and parental input with respect to cross-linguistic influence. The methodology, background of the bilingual and monolingual children, the way we code the data are also presented. We will look at both qualitative and quantitative differences between the monolingual and bilingual children's English VPCs and Cantonese DVCs in the next two chapters.

Chapter Five The Acquisition of English Verb-Particle Constructions

This chapter reports findings on the acquisition of English VPCs in Cantonese-English bilingual children, and compares the development of bilingual children with that of monolingual English-speaking children in terms of age of emergence, frequency of particles, the percentage of split/non-split order, and types of non-target forms. The results show that the bilingual children behave differently from their monolingual counterparts, indicating evidence of cross-linguistic influence from Cantonese to English. It is argued that two factors, namely structural overlap and the degree of language dominance, play a role in cross-linguistic influence in the bilingual children's English VPCs.

5.1 Distribution of English VPCs

The following particles are found in our bilingual data: *up, down, on, off, in, out, back, away and ov*er. Since these particles may occur in different constructions apart from VPCs, they are classified into five categories mentioned in Chapter 4:

(a). transitive VPCs

(b). intransitive VPCs

(c). predicative verb particles (with copula *be* and the verb particle)

(d). fragmented particle constructions which consist of a noun and a particle alone, or an isolated particle in a one-word utterance

(e). prepositional constructions.

The distribution of these particles among the five categories is shown in the following table:

Table 5.1 Distribution of verb particles in different constructions produced by Cantonese-English bilingual children (percentage in brackets)

	Timmy	Sophie	Alicia	Llywelyn	Charlotte	Kathryn	Janet	Total
Transitive	51	37	22	30	76	35	29	280
	(9.8)	(21.3)	(25.6)	(10.0)	(36.5)	(13.3)	(16.1)	(16.2)
Intransitive	208	71	23	76	102	39	51	570
	(40.1)	(40.8)	(26.7)	(25.2)	(49.0)	(14.8)	(28.4)	(32.9)
Predicative	5	0	0	4	1	4	1	15
	(1.0)	(0)	(0)	(1.3)	(0.5)	(1.5)	(0.6)	(0.9)
Fragmented	13	3	13	18	3	15	2	67
VPCs	(2.5)	(1.7)	(15.1)	(6.0)	(1.4)	(5.7)	(1.1)	(3.9)
Prepositional	242	63	28	173	26	171	97	800
	(46.6)	(36.2)	(32.6)	(58.1)	(12.5)	(64.8)	(53.9)	(46.2)
	519	174	86	301	208	264	180	1732

Table 5.2 Distribution of verb particles in different constructions produced by Peter and Eve (Diessel & Tomasello 2005, p93) (percentage in brackets)

	Peter	Eve	Total	Mean %
Transitive	291(24.5)	281(20.3)	572	22.4
Intransitive	232(19.5)	256(18.5)	488	19.0
Predicative	17 (1.4)	25 (1.8)	42	1.6
Fragmented	130 (10.9)	70 (5.1)	200	8.0
Prepositional	519(43.7)	754(54.4)	1273	49.1
	1189	1386	2575	100.0

As can be seen in table 5.1, the data includes a total of 280 tokens of VPC produced by 7 bilingual children, which accounts for an average of 16.2% of the five constructions examined. Among the seven bilingual children, Charlotte, who is more dominant in English, produced the highest percentage (36.5%) of transitive VPCs among all types of utterances containing a particle, whereas the percentage of transitive VPCs among the other bilingual children ranges from 9.8% to 25.6%. For the monolingual children, the total number of transitive VPCs produced by 2 monolingual children is 572, a number which is much greater than the bilingual children. The percentage of transitive VPCs among all the constructions in both Peter and Eve is 22.4%, around 5% higher than in the bilingual children. While the percentage of transitive VPCs in bilingual children varies from less than 10% (9.8% in Timmy) to 36.5% (Charlotte), the percentage of transitive VPCs in the two monolingual children is 24.5% in Peter and 20.3% in Eve.

5.2 Transitive VPCs with a null object

We now look at the development of English transitive VPCs. One common feature of the bilingual children's transitive VPCs is that they very often omit the direct object, producing a null object construction.

Table 5.3 Distribution of overt vs null objects in VPCs in Cantonese-dominant bilingual children (percentage in brackets)

	Timmy	Sophie	Alicia	Janet	Llywelyn	Total
Overt object	36(70.2)	23(62.2)	13(59.1)	23 (79.3)	21 (70.0)	116 (68.6)
Null object	15(29.8)	14(37.8)	9(40.9)	6 (20.7)	9 (30.0)	53 (31.4)
Total	51	37	22	29	30	169

Table 5.4 Distribution of overt vs null objects in VPCs in non-Cantonese-dominant bilingual children (percentage in brackets)

	Kathryn	Charlotte	Total
Overt object	31 (88.6)	47 (61.8)	78 (70.3)
Null object	4 (11.4)	29 (38.2)	33(29.7)
Total	35	76	111

Table 5.5 Distribution of overt vs null objects in VPCs in Peter and Eve (percentage in brackets)

	Peter	Eve	Total
Overt object	210 (72.2)	240 (85.4)	450 (78.9)
Null object	81(27.8)	41(14.6)	122(21.1)
Total	291	281	572

Table 5.3 and 5.4 show the distribution of overt vs null objects in Cantonese-dominant and non-Cantonese-dominant bilingual children respectively. As can be seen in Table 5.3 for the Cantonese-dominant group, the null-object rate in transitive VPCs ranges from 20.7% to 40.9%. Their average percentage of null object is 31.4%, which is around 10% higher than their monolingual counterparts (21.1%) as shown in Table 5.5. The null object rate in Peter and Eve is 27.8% and

14.6% respectively. Though Peter (27.8%) produced a higher percentage of null objects than Eve, most bilingual children (except Janet and Kathryn) produced a higher percentage of null objects than Peter, ranging from 29.8% to 40.9%. The data shows that most bilingual children (except Janet and Kathryn) have a higher tendency to drop the object in a VPC than the two monolingual children.

The higher object omission rate in bilingual children can be explained by two factors. On the one hand, it has been already reported that the six Cantonese-English bilingual children showed a higher rate of object omission than monolingual children (Yip & Matthews 2007) in transitive constructions, it is thus not surprising to see that bilingual children omit the object in VPCs. On the other hand, when the object is omitted in a VPC, the split/non-split distinction is neutralized, and the bilingual children then would not have to choose between the split and non-split order.

Among the Cantonese-dominant bilingual children, Alicia produced the highest object omission rate (40.9%), followed by Sophie (37.8%), Llywelyn (30%) and Timmy (29.8%). Janet produced the lowest object omission rate (20.7%), which is 6% higher than Eve and 7% lower than Peter. One interesting finding is that Charlotte, who is dominant in English, showed 38.2% object omission, which is 7% higher than the average for Cantonese-dominant bilinguals (31.4%). On the other

hand, the balanced bilingual child, Kathryn, produced only 11.4% of her VPCs without an object. The data suggests that while the Cantonese-dominant group tend to produce more null-object VPCs than their monolingual counterpart, the English-dominant child, Charlotte, also produced a high percentage of null-object VPCs as those in the Cantonese-dominant group. This implies that language dominance alone cannot be the sole factor in explaining the language transfer with respect to object omission in English VPCs.

5.3 Split/non-split order of VPCs

To examine the order of VPCs, all utterances without a direct object are excluded. Two types of VPCs based on the position of the particle are investigated:

Split VPCs: VPCs in which the particle follows the direct object

(1) We need to find it out . Charlotte (1;09;12)

Non-split VPCs: VPCs in which the particle precedes the direct object

(2) But we'll take off this. Charlotte (2;10;15)

Table 5.6 and Table 5.7 show the distribution of the two types of VPCs in the Cantonese-dominant bilingual children and non-Cantonese-dominant bilingual

children respectively. Table 5.8 shows the results of Diessel & Tomasello (2005)'s study with respect to the word order of VPCs.

Table 5.6 Frequency of split vs non-split VPCs in Cantonese-Dominant bilingual children (percentage in brackets)

	Timmy	Sophie	Alicia	Janet	Llywelyn	Total	Mean%
Split VPC	19 (52.8)	9 (39.1)	0 (0)	21 (91.3)	11 (52.4)	62	53.4
Non-split VPC	17 (47.2)	14 (60.9)	13 (100%)	2 (8.7)	10 (47.6)	54	46.6
Total	36	23	13	23	21	116	100.0

Table 5.7 Frequency of split vs non-split VPCs in Non-Cantonese-Dominant bilingual children (percentage in brackets)

	Kathryn	Charlotte	Total	Mean%
Split VPC	30 (96.8)	26 (55.3)	56	71.8
Non-split VPC	1 (3.2)	21 (44.7)	22	28.2
Total	31	57	78	100.0

Table 5.8 Frequency of split vs non-split VPCs in Peter and Eve (percentage in brackets)

	Peter	Eve	Total	Mean%
Split VPC	195 (92.9)	226 (94.2)	421	93.5
Non-split VPC	15 (7.1)	14 (5.8)	29	6.5
Total	210	240	572	100.0

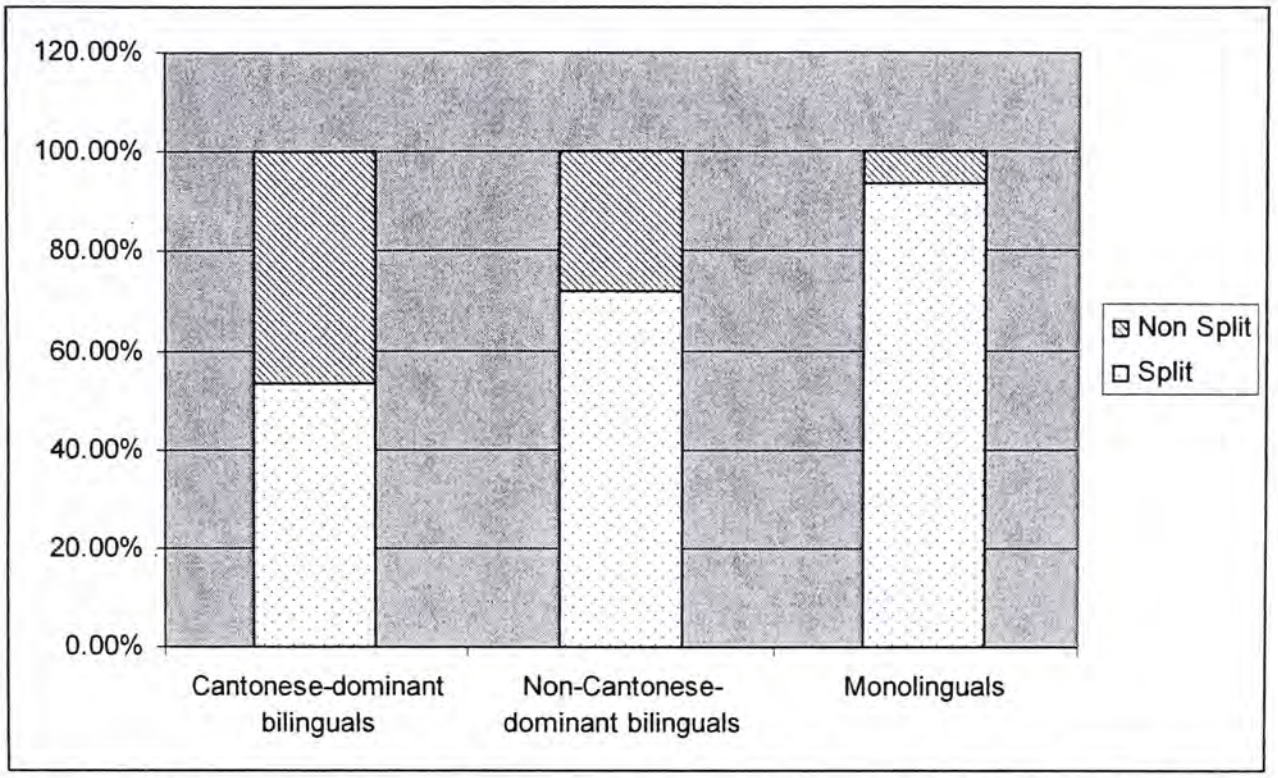


Fig. 5.1 VPC ordering in Cantonese-English bilingual children and English monolingual children

Cantonese-dominant bilingual children produce an average of 52.1% VPCs in the split order. On the other hand, non-Cantonese-dominant bilingual children and monolingual English children produce an average of 71.8% and 93.5% VPCs in the split order respectively. It seems that there is a clear distinction between Cantonese-dominant bilingual children and English-speaking monolingual children in terms of the percentage of split VPCs: the proportion of split VPCs in monolingual children is around 40% higher than that of the Cantonese-dominant bilingual children. If we exclude Janet, who performs exceptionally from the other Cantonese-dominant bilinguals, the percentage of split VPCs of the Cantonese-dominant-bilingual children ranges from 0% to 52.8%, which is much

lower than Peter (92.9%) and Eve (94.2%). Charlotte, who is an English-dominant bilingual child, also produced a much lower percentage (55.3%) of split VPCs than Peter and Eve as the majority of the Cantonese-dominant bilinguals. Out of the seven bilingual children, five of them (71.4%), including four Cantonese-dominant and one English-dominant, showed a much lower split VPC rate than the monolingual English-speaking children. The relatively low split VPC rate suggested that the bilingual children's preference on VPC ordering is not as strong as monolingual children and adults, who produce the majority of English VPCs in split order.

This result confirms the hypothesis set out in Chapter 4, where we predicted that the bilingual children would produce a lower split VPC rate than the monolingual children. This is a clear case of cross-linguistic influence in the form of frequency, where the bilingual children produced non-split VPCs much more frequently than their monolingual counterparts. This difference can be attributed to structural overlap in the word order in Cantonese simple DVCs and English VPCs. English VPCs allows two orders: namely split and non-split order. The corresponding form of English VPCs, Cantonese simple DVCs, allow only one type of word order and the surface structure of this word order is identical with the non-split order in English VPCs. Under this condition of structural overlap in word

order, cross-linguistic influence is predicted to occur in the domain of English VPCs in Cantonese-English bilingual children, consistent with of Hulk and Müller (2000)'s second condition on cross-linguistic influence.

While Hulk and Müller (2000) excluded the factor of language dominance in their study on cross-linguistic influence, the result of VPC ordering in this study can support the role of language dominance in terms of the extent of cross-linguistic influence. Among the five bilingual children who show cross-linguistic influence in VPC ordering, four (80%) are Cantonese-dominant. This implies that Cantonese-dominant children are more likely to show cross-linguistic influence in VPCs ordering than non-Cantonese-dominant children.

However, it seems that neither structural overlap nor language dominance alone can explain the result. If structural overlap alone predicted cross-linguistic influence, we might expect all the bilingual children would have a lower percentage of non-split VPCs than monolingual children, but this is not the case with our data where two bilingual children perform similarly to monolingual children. In terms of language dominance, we observe that there is one special case in both the Cantonese-dominant group and non-Cantonese dominant group. In the Cantonese-dominant group, Janet produced 91.3% of her VPCs in split order, which is much higher than the other children in this group (Timmy: 52.8%, Sophie 39.1%,

Alicia 0%, Llywelyn 52.4%) and close to those of the monolingual children (Peter 92.9%, Eve 94.2%). On the other hand, the English-dominant bilingual child Charlotte produced only 55.3% of her VPCs in split order, which is around 40% less than the other non-Cantonese-dominant child Kathryn (96.8%), and close to the Cantonese-dominant children Timmy (52.8%) and Llywelyn (52.4%). These two cases do not conform to what we have predicted for Cantonese-dominant children based on language dominance.

One possible explanation for Janet and Charlotte's exceptional performance is that this variation within groups is due to individual differences. The bilingual children may have different developmental patterns in different grammatical constructions with varying degrees of cross-linguistic influence. More specifically, Janet and Kathryn may perform similarly to the other bilingual children within their group (Cantonese-dominant/non-Cantonese-dominant) in a certain grammatical domain, but differently in some other domains, for example, English VPCs in this case. We shall look at the input frequency of English VPCs in Janet in a later section (see 5.6) to see if it plays a role in accounting for her exceptional performance.

5.4 Type of VPCs in split/non-split order

5.4.1 Spatial VPCs vs Non-spatial VPCs

In chapter Three we highlighted the importance of distinguishing between types of VPCs due to their difference in structure following Sawyer (2001). In this section, VPCs are classified as either spatial or non-spatial with respect to VPC order, instead of compositional vs non-compositional, due to three reasons. First, it is difficult to make a clear cut between compositional and non-compositional in the literature: Jackendoff (2002) adopts a three-way distinction with compositional, aspectual, and non-compositional VPCs; Sawyer (2001) groups compositional and aspectual VPCs as a single category, while Fraser (1976) argues that VPCs may show varying degrees of compositionality. Secondly, we found that our bilingual children produced very few cases of idiomatic/non-compositional VPCs: most of the particles are directional or aspectual. Finally, the corresponding form of VPC, the Cantonese DVC, is most likely directional, classifying English VPCs by the property of spatial/non-spatial enable us to see if there is any relationship between English VPC and Cantonese DVC.

5.9 Type of VPCs in split order in Cantonese-dominant bilingual children (percentage in brackets)

	Timmy	Sophie	Alicia	Janet	Llywelyn
Spatial	11 (57.9)	8 (88.9)	0	15 (71.4)	9 (81.8)
Non-spatial	8 (42.1)	1 (11.1)	0	6 (28.6)	2 (18.2)

Table 5.10 Type of VPCs in split order in non-Cantonese-dominant bilingual children (percentage in brackets)

	Charlotte	Kathryn
Spatial	15 (57.7)	20 (66.7)
Non-spatial	11 (42.3)	10 (33.3)

Among the split VPCs in the bilingual children, more than half are spatial, ranging from 57.7% (Charlotte) to 88.9% (Sophie). Among Cantonese-dominant bilingual children, the average percentage of spatial VPC is 75% if we exclude Alicia who produced zero case of split VPC. This figure is slightly higher than Charlotte (57.7%) and Kathryn (66.7%). However, due to the variations in performance between each individual bilingual child, the difference between Cantonese-dominant bilingual children and non-Cantonese-dominant children is not significant. In English monolingual children, the average percentage of spatial and non-spatial split VPCs reported in Diessel and Tomasello (2005)'s study is 81.8% and 19.2% respectively. Since each bilingual child's performance varies greatly in this area, a clear distinction between bilinguals and monolinguals cannot be seen in this regard.

Table 5.11 Type of VPCs in non-split order in Cantonese-dominant bilingual children (percentage in brackets)

	Timmy	Sophie	Alicia	Janet	Llywelyn
Spatial	8 (47.1%)	3 (21.4%)	9 (81.8%)	2 (100%)	4 (40%)
Non-spatial	9	11	2	0	6

Table 5.12 Type of VPCs in non-split order among non-Cantonese-dominant bilingual children (percentage in brackets)

	Charlotte	Kathryn
Spatial	8 (33.3)	1 (100.0)
Non-spatial	16 (66.7)	0 (0.0)

Janet and Kathryn, who perform more similarly to the monolingual children, produced only a few tokens of non-split VPCs. The percentage of non-split spatial VPCs among other bilingual children ranges from 21.4% (Sophie) to 47.1% (Timmy). These figures are much higher than those reported for monolingual children. According to Sawyer (2001), less than 20% of the non-split VPCs in monolingual children are compositional. This suggests that while monolingual children tend to produce non-compositional VPC in non-split order, bilingual children may not follow this pattern and produced a slightly higher percentage of non-split spatial (which is compositional) VPCs.

The relatively high percentage of spatial VPCs in split order among bilingual children seems to confirm the factors underlying VPC word ordering which we have mentioned in Chapter 2, where the VPC tends to be split when it is spatial. While the bilingual children tend to produce the non-split VPCs more frequently, their split VPCs are usually spatial, which is similar to adults' VPCs. For the non-split VPCs, all of them produced a higher proportion of spatial (compositional) VPCs than the monolingual children. This is possibly an indication of language transfer from

Cantonese: Cantonese simple DVCs obligatorily appear in non-split order and their directional complements express directional/spatial meanings in a way similar to English directional particles.

5.4.2 English VPCs containing particles *in* and *out* and their word order

As discussed in section 2.3.2, it is observed that the English particles *in* and *out* do not have a corresponding form in Cantonese simple DVCs. Their corresponding forms in Cantonese have to combine with *lai4* 嚟 'come' or *heoi3* 去 'go' to form a compound directional complement which is part of a complex DVC. Since the word order of Cantonese complex DVCs is different from simple DVCs, where the object intervenes between the main verb and the compound directional complement (just like the word order of English split VPCs), we have expected the developmental patterns of English VPCs containing these two particles may be different from the others.

Table 5.13 shows percentage of split order in English VPCs containing particles *in* and *out* vs other particles.

Table 5.13 Word order of English VPCs containing particles *in* and *out* vs others

Particle	*in*	*out*	*away*	*back*	*up*	*down*	*on*	*off*
Split	26	29	3	13	13	3	16	11
	(61.9%)	(74.4%)	(60%)	(92.9%)	(20%)	(60%)	(53.3%)	(34.3%)
Non-split	16	10	2	1	13	2	14	21
Total	42	39	5	14	26	5	30	32

English VPCs containing the particle *back* have the highest split VPC rate (92.9%), followed by VPCs containing particles *in* and *out*, with a split VPC percentage of 61.9% and 74.4% respectively. The relatively high split VPC rate of the VPCs containing particles *in* and *out* may reflect the language transfer from their corresponding Cantonese compound directional complements in complex DVCs, in which the word order resembles that of the English split VPCs.

5.5 Frequency of particles in VPC

In Chapter 2 we have discussed that particles in English VPCs and directional complements in Cantonese DVC exhibit semantic differences. Some English particles such as *up* can express either directional or aspectual meaning, and they could also appear in non-compositional constructions. Cantonese directional complements, on the other hand, usually encode spatial meanings only in DVCs. Therefore, English particles encoding non-spatial meanings might be more

challenging for bilingual children. In the following section we calculate the frequency of particles among the bilingual children and compare the results with monolingual children to see if there is any performance difference between the two groups.

Table 5.14 Frequency of particles in the VPCs in Cantonese-dominant bilingual children (Brackets indicate the age of first non-imitative use)

	Timmy	Sophie	Alicia	Janet	Llywelyn	Total	Mean%
out	17(2;4)	7(2;3)	2(2;11)	9(3;3)	2(2;7)	37	21.9
up	10(2;2)	11(2;5)	1(2;11)	4(3;3)	9(2;2)	35	20.7
in	4 (2;4)	2(2;7)	14(1;10)	1(3;10)	10(2;2)	31	18.4
off	9 (3;0)	0	2(2;5)	5(3;3)	5(2;6)	21	12.4
away	4 (2;11)	8(2;3)	0	0	1(2;2)	13	7.7
back	1(3;6)	6(2;3)	0	6(3;1)	0	13	7.7
on	4 (2;0)	1(2;2)	1(2;11)	2(3;6)	4(2;6)	12	7.1
down	2 (2;11)	1(2;3)	2(1;7)	2(3;6)	0	7	4.1
over	0	0	0	0	0	0	0
	51	36	22	29	31	169	100.0

Table 5.15 Frequency of particles in VPCs in non-Cantonese-dominant bilingual children (Brackets indicate the age of first emergence)

	Charlotte	Kathryn	Total	Mean%
on	26(1;10)	7(3;2)	33	29.5
off	25(1;10)	3(3;2)	28	25
in	9(1;9)	11(3;2)	20	17.9
out	7(1;10)	9(3;2)	16	14.3
up	3(2;4)	3(3;3)	6	5.4
back	2(2;7)	1(3;11)	3	2.7
down	2(2;7)	1(3;9)	3	2.7
away	2(2;1)	0	2	1.8
over	1(3;0)	0	1	0.9
	77	35	112	100.0

Table 5.16 Particles in VPCs produced by Peter and Eve (Diessel and Tomasello 2005, p95)

	Peter Number	Age of First non-imitative use	Eve Number	Age of first non-imitative use	Total Number	Mean %
on	59	2;0	49	1;7	108	18.9
off	73	1;11	33	1;9	106	18.4
back	61	1;11	39	1;9	100	17.5
up	21	1;11	44	1;7	65	11.5
in	9	1;11	46	1;9	55	9.8
away	19	1;11	35	1;9	54	9.5
out	24	1;11	19	1;8	43	7.6
down	20	1;10	13	1;10	33	5.8
over	5	1;9	2	2;3	7	1.2
around	0	-	1	2;1	1	0.2
	291		281		572	100

In monolingual children, the earliest VPCs appear between the ages of 1;7 and 2;0 according to Diessel & Tomasello (2005)'s study. For the bilingual children, since the starting age of four of them (Timmy, Llywelyn Kathryn and Janet) in the corpus ranges from age 2 to age 3, we may not be able to tell whether the particles have emerged before the ages listed above in the table. In the other three bilingual children, the earliest VPCs in Sophie, Alicia and Charlotte appear between 2;2 to 2;7, 1;7 to 2;11 and 1;9 to 3;0 respectively. The data show that most of the particles emerge earlier in monolingual children than the bilingual children.

The most frequent particles in monolingual children are *on, off* and *back*, followed by *up, in, away* and *down*. For Cantonese-dominant bilingual children, *out*,

up, and *in* are the most frequent particles, followed by *off*, *away*, *back* and *on*, and the particle *down* only appears in a few tokens. For non-Cantonese-dominant bilingual children, the result is closer to the monolingual children: *on* and *off* are the most frequent particles, followed by *in* and *out*, while *back*, *down*, *away* and *over* only appears in a few tokens. These results can be attributed to cross-linguistic influence from Cantonese. The most frequent particles among Cantonese-dominant bilingual children, *out*, *up* and *in,* are directional in nature with a corresponding form in Cantonese: *ceot1* 出 "out", *hei2* 起 "up" or *soeng5* 上 "up" and *jap6* 入 "in". These are Cantonese verb directional complements which can appear after a main verb, corresponding to directional English VPCs (see chapter 2 for discussion).

(3) a. take out (Timmy 2;04;07)

b. 攞 出 嚟 啦 (Timmy 2;08;18)

lo2 ceot1-lei4 laa1

take out-come SFP

"take (it) out"

(3a) and (3b) illustrate the correspondence between English VPCs and Cantonese DVCs. In (3a), Timmy produced an English VPC "take out", while (3b) is a

corresponding form of (3a) in Cantonese. The verb particle in (3a) is *out*, while the compound directional complement in (3b) is *ceot1-lei4*, literally "out–come". These two expressions are similar in meaning and structure. Firstly, they can both express an outward direction of the main verb, *take* and *lo2* "take" respectively. In terms of word order, they both appear after the main verb. Since Timmy omits the object in both (3a) and (3b), these two constructions are very similar on the surface. Therefore, Timmy, as well as other bilingual children, may establish this type of correspondence between English particles (*out*, *up*, *in*) and Cantonese directional complements (*ceot1* 出 "out", *hei2* 起 or *soeng5* 上 "up" and *jap6* 入 "in"), thus producing these particles more frequently than the others.

The other less frequent particles in Cantonese-dominant bilingual children, such as *off*, *back* and *on*, are adverbial and aspectual in nature, and usually contain multiple meanings. For instance, *off* indicates the meaning of "no longer covering or enclosing" in *take off*; and "out of operation" in *turn off*. Therefore, they are not as transparent in meaning as the other particles such as *out*, *up* and *in*. Most importantly, they do not have a corresponding form in Cantonese.

The most frequent particles in non-Cantonese-dominant bilingual children are *on* and *off*, which is also the case for Peter and Eve. It seems that language dominance plays a role in explaining the frequency of particles: Cantonese-dominant children

produced particles which have a corresponding form in Cantonese more frequently, while non-Cantonese-dominant children perform similarly to English monolinguals.

5.6 Statistical analysis

Diessel and Tomasello (2005) have conducted both a monofactorial and multifactorial statistic analysis on six factors motivating VPC order in monolingual children. For monofactorial analysis, they look at each factor in isolation and an exact chi-square test is performed to see the association between each factor and VPC ordering. The six factors are listed as follows:

(i) The length of the direct object: the direct object may consist of one word, two words, three words or four or more words.

(ii) The complexity of the direct object: the direct object may be a simple NP, an NP consisting an adjective or a NP including a relative clause.

(iii) The NP type of the direct object: the direct objects could be the personal pronouns, other pronouns such as *this* and *that* or lexical NPs.

(iv) The meaning of the particle (which may be spatial or non-spatial in meaning).

(v) The occurrence of a definite or indefinite determiner: the direct object NP may include a definite determiner, an indefinite determiner, or simply does not include any determiners.

(vi) The occurrence of a directional adverbial following the VPC: *put down the pen* vs *put the pen down on the table.*

Results in their study show that four of the six factors, namely the length of the direct object, complexity of the direct object, the NP type of the direct object and the meaning of the particle, are related to VPC ordering. In multifactorial analysis, they conducted a logistic regression to find the most parsimonious factors that can explain the VPC ordering. They found that only two factors, namely the NP type of the direct object and the meaning of the particle, to be most significant in determining the split/non-split order of VPCs in monolingual English-speaking children.

We are also interested to see the case of bilingual children: what factors are associated with the split/non-split ordering of VPCs in bilingual children? Are they different from the monolingual children? In order to answer this question, we also conducted a monofactorial analysis of the English VPCs of the Cantonese-English bilingual children based on Diessel and Tomasello (2005)'s study. We look at both

the results of chi-square test and Fisher's exact test: if assumptions of the chi-square test are violated due to the small sample size, Fischer's exact test would be performed.

5.6.1 Monofactorial analysis among Cantonese-dominant bilingual children

Among the six factors, the length of the direct object (Fisher's exact test, $p< .001$), NP type of the direct object ($\chi^2(2)=38.416$, $p<.001$), meaning of the particle ($\chi^2(1)=5.012$, $p<.05$) and the (in)definiteness of the direct object NP (Fisher's exact test, $p< .001$) are found to be significantly associated with the split/non-split order of the VPCs. If we remove Janet, who perform exceptionally from the other Cantonese-dominant bilingual children, the results are the same: the four factors as mentioned earlier in this paragraph are statistically associated with split/non-split VPC order. Distributions of VPC ordering relative to four factors are given in the following four tables:

Table 5.17 Distribution of VPC order relative to length of the object

	Split VPC		Non-split VPC		Total
	Frequency	Residuals	Frequency	Residuals	
1 word	33	3.9	24	-3.9	57 (61.3%)
2 words	5	-3.6	26	3.6	31 (33.3%)
3 words	1	-1.0	4	1.0	5 (5.4%)
	39		54		93

Table 5.18 Distribution of VPC order relative to the NP type of the object

	Split VPC		Non-split VPC		Total
	Frequency	Residuals	Frequency	Residuals	
Personal PROs	27	-5.3	8	5.3	35 (37.6%)
Other PROs	4	-.1	6	.1	10 (10.8%)
Lexical NP	8	-5.1	40	5.1	48 (51.6%)
	39		54		

Table 5.19 Distribution of VPC order relative to the meaning of the particle

	Split VPC		Non-split VPC		Total
	Frequency	Residuals	Frequency	Residuals	
Spatial	30	2.1	30	-2.1	33 (35.5%)
Non-spatial	9	-1.3	24	1.1	60 (64.5%)
	39		54		93

Table 5.20 Distribution of VPC order relative to the (in)definiteness of the object

	Split VPC		Non-split VPC		Total
	Frequency	Residuals	Frequency	Residuals	
Definite	12	-3.2	35	3.5	47 (50.5%)
Indefinite	1	-.3	2	.3	3 (3.2%)
No determiner	26	3.4	17	-3.4	43 (46.2%)
	39		54		93

For factor that is larger than a 2 X 2 table, we look at the adjusted standardized residuals to see to see which particular category deviates from the expected

frequency[13]. In Table 5.16, adjusted standardized residuals reveal that 1-word object occurs more often than expected in split VPC and 2-word object occurs more often than expected in non-split VPC. With respect to the NP type of object in Table 5.17, personal pronoun occurs more often than expected in non-split VPC: a result which is contrary to monolingual children. In Diessel and Tomasello (2005)'s study, personal pronouns in split VPC instead of non-split VPC occurs more often than expected in monolingual children. In Table 5.19, we can see that the significant effect between VPC order and in(definiteness) of the object is mainly due to the presence of objects without a determiner. Following Diessel and Tomasello (2005), this category is removed and another Fisher's exact test is performed. Results show that the association between (in)definiteness of the object (marked by a determiner) and VPC order is not significant.

In sum, three of the factors, namely the length of the object, meaning of the particle and the NP type of the object is found to be statistically related to VPC order in Cantonese-dominant bilingual children.

5.6.2 Monofactorial analysis among non-Cantonese-dominant bilingual children

[13] Under the current analysis, if (adjusted standardized) residual is > 1.96, the frequency is higher than expected by chance.

For the English-dominant child Charlotte, only one factor, namely the meaning of the particle is found to be significantly associated with the VPC order ($\chi^2(1)=8.58$, $p< .05$). On the other hand, none of the factors is found to be statistically associated with the VPC order in the balanced bilingual child Kathryn. This might be partially due to the small sample size of the data.

In Diessel & Tomasello (2005)'s study, four of the six factors, namely the length of the direct object, the complexity of the direct object, NP type of direct object and the meaning of particle are found to vary with the VPC order. In Cantonese-dominant bilingual children, three of them, the direct object, NP type of the direct object and the meaning of particle are related to the VPC order. The difference between the two groups of children lies in the factor of the complexity of the direct object: Cantonese-dominant bilingual children might be less sensitive to the complexity of the direct object with respect to VPC word order. Another possibility is that Cantonese-dominant children tend to produce less complex direct object than monolingual children and the association between the complexity of the direct object and VPC word order thus cannot be captured from the corpus data. On the other hand, only the factor of the meaning of the particle is found to be statistically associated with VPC word order in the English-dominant bilingual child, Charlotte.

We are not able to perform statistical analysis on the difference between the bilingual children and the English monolinguals due to the small samples in the bilingual children's data. Therefore, we focus more on the qualitative differences in the developmental patterns between the bilingual children and monolingual children.

5.7 Input analysis

A parental input analysis has been done on the corpora for Alicia and Janet to see whether the external factor – language input -- affects the acquisition of English VPCs in bilingual children. Results are summarized in the following table:

Table 5.21 Parental Input analysis

	VPC without object	VPC with object	
		Non-split VPC	Split VPC
Alicia's Parental Input (Father)	2 (1.2%)	159	
		24 (15.1%)	135 (84.9%)
Janet's Parental Input (Father)	4 (1.5%)	262	
		19 (7.3%)	243 (92.4%)

The data in Table 5.20 may be compared with Alicia and Janet's performance:

Table 5.22 Alicia and Janet's production of VPCs

	VPC without object	VPC with object	
		Non-split VPC	Split VPC
Alicia	9 (40.9%)	13	
		13 (100%)	0 (0%)
Janet	6 (20.7%)	21	
		2 (8.7%)	23 (91.3%)

For the object omission rate in English VPCs, we can clearly see that there are only a few tokens in both Alicia and Janet's parental input (1.2% and 1.5% respectively), while Alicia produced a much higher object omission rate (40.9%) than her parental input and another Cantonese dominant child Janet (20.7). When we look at the split/non-split order in VPCs, Janet's father produced a marginally higher percentage of split VPCs (92.4%) than that of Alicia's father (84.9%). Comparing the split/non-split VPCs in Alicia and Janet, we found that there's a huge difference between the two bilingual children: Alicia did not produce any split VPCs whereas Janet produced 91.3% of her VPCs in split order, a figure very close to her parental input (92.4%). The relatively lower percentage of split VPCs in Alicia's parental input (84.9%) clearly cannot explain the huge difference between the two bilingual children. It appears that cross-linguistic influence with respect to the VPC word order has taken place in Alicia but not Janet, and this cannot be explained by parental input in Alicia's case. Another point is that both Alicia and Janet are Cantonese-dominant, and thus the factor of language dominance also cannot account for why cross-linguistic influence occurs in Alicia but not Janet.

5.8 Non-target forms

The following section discusses the non-target forms of English VPCs produced by

bilingual children.

5.8.1 Non-split VPCs with personal pronoun as direct object

While Cantonese-dominant bilingual children produced the non-split VPCs frequently, some of them place the personal pronouns after the verb particle, which is ungrammatical in English:

(4) a. *take off it. (Charlotte 2;02;06)

b. *Wake up me. (Sophie 2;05;16)

The above two utterances are non-target forms produced by Charlotte and Sophie. In these two examples, the personal pronouns *it* and *me* occur after the particle *off* and *up* respectively, resulting in a non-split form which is ungrammatical in adult VPCs. Among the 7 bilingual children, 3 produced this type of non-target form:

Table 5.23 Number of non-split VPCs with pronoun as object

	Timmy	Sophie	Alicia	Llywelyn	Janet	Charlotte	Kathryn
V-Prt-Personal Pronoun (Non-split)	0	9	1	0	0	7	0

Among the three bilingual children who produce the V-Prt-Personal Pronoun non-target form, Sophie and Alicia are Cantonese dominant whereas Charlotte is

English dominant. This non-target form has never been reported in the literature on acquisition of VPCs in monolingual English children. Therefore, this form might reflect language transfer from Cantonese DVCs, where personal pronouns can occur in both split and non-split DVCs:

(4) c. 舉 起 佢

geoi2 hei2 keoi5

lift rise it

"lift it up"

d. 攞 佢 出 嚟

lo2 keoi5 ceot1-lai4

take it out-come

"take it out here"

(4c) is a simple DVC, where a personal pronoun *keoi5* occurs obligatorily after the directional complement *hei2* 'rise'. In (4d), on the other hand, the personal pronoun *keoi5* precedes the compound direction complement *ceot1 lai4*. In terms of surface structure, (4c) resembles the English non-split VPCs more than (4d) in the sense that the directional complement does not appear in a compound. Therefore, it may be

reasonable to assume that language transfer has taken place due to the occurrence of the obligatory non-split simple DVCs in (4c), where personal pronouns are not exceptional, unlike the English non-split VPCs.

Another possible explanation involves properties of the VPC itself. Interestingly, among all the English V-Prt-Personal Pronoun forms produced by Sophie, Alicia and Charlotte, many of the particles in these forms are not purely directional. These non-target forms include the particle *on* in *turn on*, which means to be in operation; *off* in *take off* which means to remove; and *on* in *put on* which means to clothe oneself with. These English VPCs, such as *put on*, *take off* and *turn on,* can actually be replaced by one single Cantonese action verb which is not necessarily a DVC:

put on : zoek3 著 "put on or wear"

take off: ceoi4 除 "take off"

turn on: hoi1 開 "turn on or open"

If the bilinguals replace these VPCs with one single Cantonese main verb, it is natural for them to place the direct object, be it a personal pronoun or a noun, after the verb and the particle. This explanation, however, is not based on the structural

overlap hypothesis, rather it is a direct form mapping from Cantonese to English.

Though the number of this type of non-target form is relatively small and not every bilingual child produced such forms,[14] we can at least see that language transfer in the form of non-target [*V-Prt-Personal Pronoun] VPCs has taken place in two of the Cantonese-dominant bilingual children (Sophie and Alicia) and one English dominant bilingual child (Charlotte) from Cantonese to English. Moreover, language transfer does not necessarily occur only from a stronger to a weaker language (Sophie and Alicia), but also from a weaker language to a dominant language (Charlotte).

5.8.2 The combination of the verb and the particle

There are some instances of VPCs produced by bilingual children which show similarity to the surface form of Cantonese DVCs:

(5) a. I open this away. (Charlotte 2;07;23)

b. take down sweet on the cupboard . (Janet 3;06;02)

c. put in the ambulance and drive him away (Timmy 3;05;01)

[14] It is noted that there is a number of this type of non-target forms in Yip and Matthews (2007)'s diary data, but they are not captured in the corpus due to the small sample size.

In sentence (5a), Charlotte wanted to express that she would open something from the context. The addition of *away* after the direct object *this* shows a corresponding form in Cantonese expressing the meaning of "open", which consists of two morphemes *daa2* 打 "hit" and *hoi1* 開 "away":

(5) d. 我 打開 呢個

ngo5 daa2-hoi1 nei1go3

I hit-away(=open) this

I open this.

In terms of surface structure, the difference between (5a) and (5d) is the word order. However, the *away* in (5a) is redundant. One possibility is that the *away* in (5a) is the result of the *hoi1* in Cantonese disyllabic verb *daa2-hoi1*, which led her to map two elements, one verb and one particle in English in expressing the meaning of "open".

In sentence (5b), the meaning Janet intended to express is that "take the sweet out from the cupboard". English VPC "take down" generally refers to "take notes or write down something" or "remove something". On the contrary, the use of *take*

down here may correspond to the Cantonese complex DVCs *lo2*(攞) "take" (verb) + *lok6* 落 "down" *lai4* 嚟 "toward"(compound directional complement), which means "take something down from here":

(5) e. 喺個櫃度攞啲糖落嚟

hai2 go3 gwai6 dou6 lo2 di 1 tong2 lok6-lai4

in the cupboard there take some sweets down-come

"Take some sweets down from the cupboard"

Janet intended to use the particle *down* to indicate the path of the action *take*, showing the Cantonese-DVC-like structure in her utterance. The English *down* in (5b) may correspond to the compound directional complement *lok6-lai4* in (5e) instead of the *down* in English VPC *take down* meaning "take notes" or "remove something".

In (5c), the VPC *drive away* in English means to force (someone) to go away. On surface structure, *drive him away* is grammatical with the meaning of 'make him want to go away'. However, Timmy actually intended to express the meaning of "sending him away by putting him in the ambulance" in the context. Timmy's VPC

drive him away indicates a corresponding form from Cantonese:

(5) f. 車佢走

ce1 keoi5 zau2

drive him away

"send him away by driving"

Wh English *drive* refers to the act of driving, it is normally intransitive and does not take an object. On the other hand, Cantonese *ce1* "drive" is transitive and can take personal pronoun or other nouns as objects. It can combine with *zau2* "away" to indicate the meaning of "sending something away with the manner of driving". Therefore, Timmy may map (5f) into (5c), producing a form which shares the same surface structure with (5f).

5.8.3 Particle used as a verb

There are occasional examples where the bilingual child used the particle alone to express the meaning of the whole VPC:

(6) a. off the light and I cannot (Alicia 2;11;19)

b. I cannot up (Charlotte 2;09;19)

In the (6a), Alicia produced *off* only to express the meaning of *turn off*. She has omitted the main verb *turn*, leaving only the verb particle *off* to express the meaning of "turn off". This type of non-target form is also found in some monolingual children (Snyder, 2007).

There are two possible explanations for this type of construction among bilingual children. The first one is associated with language transfer from Cantonese. In Cantonese, the meaning of "turn off" is expressed by one monosyllabic verb without particles or complements:

(6) c. 閂 燈

saan1 dang1

turn-off light

"Turn off the light".

It might be the case that the use of particle *off* to express the meaning of "turn off" is influenced from the Cantonese verb *saan1*(閂), which consists of one verb only without a following particle or complement. Bilingual children may use the particle

off alone to represent the whole VPC *turn off* in a way similar to the Cantonese verb verb *saan1* 閂 'turn off'.

Another explanation is that *off* can be used predicatively with copula *be*:

(6) d. The light is off.

In the above example, the adverbial particle *off* alone is used to indicate the status of *the light*. In addition, *turn on*, which is the opposite of *turn off*, differs from *turn off* only by the particle on surface. Therefore, it is not surprising to use the crucial element, the particle, instead of the main verb, to express the meaning of the whole VPC. This would also explain why monolingual children produce this type of non-target forms too.

In (6b), Charlotte intended to express the meaning of "get up" by using the particle *up* alone. However, unlike (6a), the meaning of "get up" cannot be expressed in one single monosyllabic verb in Cantonese:

(6) e. 起 身

hei2 san1

raise body

"get up"

Though (6e) is disyllabic, only *hei2* encodes the action meaning. Therefore, it is possible that Charlotte in (6b) only used the English particle *up*, which corresponds to Cantonese *hei2* to denote the meaning of the whole VPC *get up*.

From these three types of examples, we can see that language transfer from Cantonese occurred in these non-target forms, mapping the Cantonese corresponding form into English as in (4a), (4b) and (5a)-(5c). The mapping can be in terms of word order as in (4a) and (4b), as well as in the combination of the verb and the particle as in (5a)-(5c). In addition, some English VPCs such as *turn off* which do not encode directional meaning do not have a corresponding form in Cantonese DVC, and the bilingual child in (6a) and (6b) may use the particle alone to express the meaning in a way similar to the corresponding Cantonese form.

5.8.4 Errors reported in monolingual children

In the acquisition of English VPCs in monolingual English children, the following non-target forms are reported:

(7) a. took my eye on

b. I xx go downed@n.

(Snyder, 2007: 67)

c. you put on lipstick on. (Eve 2;1)

d. turn on a light off. (Peter 2;0)

(Diessel and Tomasello, 2005: 97)

Example (7a) is a lexical type of error, where the particle *on* should be replaced by *out*. This type of non-target combination can also be found in the bilingual children, as listed in section 2. However, it should be noted that this type of non-target form in monolingual children is different from that of the bilingual children: while the combination errors in monolingual children appear relatively random, most of the non-target forms in the bilingual children can be explained in terms of language transfer from Cantonese.

(7b) is a morphological error in which the inflectional marker is attached to the particle instead of the main verb. This non-target form indicates that the monolingual child is not clear about the head of the VPC, adding the inflectional marker to the particle instead of the verb. This type of error has not been found in the bilingual children. In fact, inflectional tense markers such as that in (7b) are rarely found in the bilingual corpus. This might be due to the fact that these markers

are less audible and hence difficult to transcribe in the corpus, or it might reflect the later acquisition of these morphology in the bilinguals.

(7c) and (7d) involve an extra particle after the whole VPC: in (7c), the particle *on* has been repeated after the direct object, whereas in (7d) the particles *on* and *off* are opposite in meaning. This type of non-target form is relatively rare in monolingual children, and it cannot be found in the bilingual children.

5.9 Summary

In this chapter, we have investigated bilingual children's acquisition of English VPCs and compared their development with that of monolingual English children. Bilingual children produced non-split VPCs more frequently than split VPCs, in a pattern which is quite different from monolingual children. Compared to monolinguals, a relatively high percentage of the non-split VPCs produced by bilingual children are spatial. These two findings clearly demonstrate cross-linguistic influence from Cantonese due to the structural overlap. Nevertheless, one of the Cantonese-dominant children, Janet, produced a percentage of split VPCs close to the monolingual children and different from the other Cantonese-dominant children; whereas Charlotte, who is more dominant in English, produced a percentage of split VPCs closer to the Cantonese-dominant children, suggesting that

neither structural overlap or language dominance alone can fully account for the language transfer in English VPCs.

The ranking of the frequency of individual particles also differs between the monolingual children, Cantonese dominant bilingual children and non-Cantonese dominant children. It is argued that cross-linguistic influence from Cantonese has caused the difference: English particles which have corresponding forms in Cantonese may show "accelerated" development, in which the bilingual children produce a greater number of these particles; the frequency of those which do not have corresponding form in Cantonese is relatively lower.

A parental input analysis is carried out on two Cantonese-dominant children, Alicia and Janet. While the percentage of split VPCs in Janet and her father is quite similar, there is a huge gap between Alicia and her father's proportion of split VPCs. It seems that for Alicia, the influence from her father is limited, and we have to look at other factors which might cause the difference in performance between the two children. A statistical analysis was also carried out to find out the motivation of split/non-split orders of bilingual children's VPCs, but the difference between each particular bilingual child is quite big and reduced the reliability of the statistical figures. Finally, we reported some non-target forms that can be explained by language transfer from Cantonese DVCs.

We observe that cross-linguistic influence is manifested in the proportion of split vs non-split orders of VPCs, the types of VPCs (spatial vs non-spatial) and the frequency of individual verb particles, as well as the non-target forms of English VPCs produced by bilingual children. In accounting for the cross-linguistic influence, structural overlap and language dominance can only partially explain the pattern, whereas the effect of parental input is not consistently significant. We will discuss the interaction of these factors in detail in Chapter Seven.

Chapter Six The Acquisition of Cantonese DVCs

This chapter discusses the acquisition of Cantonese directional verb complement constructions (DVCs) in both bilingual and monolingual children. We examine a total of seven most frequent directional verb complements in child Cantonese which are comparable to the English verb particles: *soeng5* 上 "up", *hei2* 起 "up", *lok6* 落 "down", *ceot1* 出 "out", *jap6* 入 "in", *hoi1* 開 "away", *faan1* 返 "back", *dai1* 低 "down" and *zau2* 走 "away". Since some of these particles may contain multiple meanings, only when they express meanings comparable to those of the English VPCs will they be included for analysis.

6.1 Simple and complex DVCs

In the first place, we searched and extracted all the cases of simple and complex DVCs containing the target directional complement. The frequency and age of first non-imitative use of the DVCs are shown the following table:

Table 6.1 Distribution of Simple and Complex DVCs in bilingual children

	Simple DVCs	Age of first use	Complex DVCs	Age of first use	Total
Timmy	15	2;02;20	48	2;02;20	63
Sophie	11	1;06;14	16	1;09;20	27
Alicia	14	1;09;10	16	1;07;30	30
Llywelyn	4	2;06;20	0	-	4
Janet	11	3;00;11	21	2;10;16	32
Charlotte	0	-	1	3;00;03	1
Kathryn	8	3;00;03	17	3;03;16	25
Total	63		119		182

From the corpus, Timmy produced the greatest number of DVCs among all the bilingual children whereas Llywelyn and Charlotte produced only a few tokens of DVCs: only 4 cases of simple DVCs in Llywelyn and 1 case of complex DVC in Charlotte. The earliest case of simple DVC in Llywelyn appeared at age 2;06;20, which is much later than Sophie (1;06;14), Alicia (1;09;10) and Timmy (2;02;20). The only case of DVC in Charlotte appeared at age 3;00;03.

The distribution of simple and complex DVCs in Table 6a shows that most bilingual children produced a greater number of complex DVCs than simple DVCs. Llywelyn, on the other hand, produced only simple DVCs and no complex DVCs.

The earliest DVCs were produced by Sophie (simple DVCs at 1;06;14 and complex DVCs at 1;09;20) and Alicia (simple DVCs at 1;09;10 and complex DVCs at 1;07;30), followed by Timmy (both simple and complex DVCs at 2;02;20) and Llywelyn (simple DVCs at 2;06;20). These four bilingual children are all

Cantonese-dominant. The age of emergence of DVCs is relatively late in one of the Cantonese-dominant children, Janet (complex DVCs at 2;10;16, simple DVCs at 3;00;11) and the two non-Cantonese-dominant bilinguals Charlotte (the only DVC was attested at 3;00;03) and Kathryn (simple DVCs at 3;00;03, complex DVCs at 3;03;16). For Janet and Kathryn, however, the data in the corpus came from a later stage than the other bilingual children (the starting age of Janet and Kathryn is 2;10;16 and 3;01;05 respectively), so they might have produced DVCs much earlier than recorded in the corpus. On the other hand, it is clear that Charlotte produced her first (and only) DVC in the corpus at a much later stage than the others.

The first non-imitative uses of simple DVC appear before those of complex DVC in Sophie (Cantonese-dominant) and Kathryn (non-Cantonese-dominant), while complex DVCs appear before simple DVCs in the case of two Cantonese-dominant bilingual children Alicia and Janet. As for Timmy, simple DVCs and complex DVCs occur in the same transcript. The gap between the age of first non-imitative use of simple DVCs and complex DVCs is around 2 to 3 months in four of the bilinguals: Sophie, Alicia, Janet and Kathryn. On the other hand, Llywelyn only produced 4 simple DVCs without any complex DVCs, while Charlotte produced only 1 complex DVC without any simple DVCs.

Table 6.2 Distribution of Simple and Complex DVCs in monolingual Cantonese-speaking children in Hong Kong Cantonese Child Language Corpus (CANCORP) (Lee et al. 1996)

	Simple DVCs	Age of first use	Complex DVCs	Age of first use	Total
wbh	5	2;09;19	1	3;02;20	6
cgk	28	1;11;01	30	2;02;07	58
mhz	4	1;11;06	5	1;10;23	9
ckt	4	2;04;14	5	1;11;27	9
ltf	10	2;06;01	13	2;04;27	23
hhc	5	2;05;13	20	2;05;03	25
lly	16	2;08;10	12	3;00;11	28
ccc	8	2;02;06	25	2;02;06	33
	80		111		191

From Table 6.2, we can see that most of the monolingual children produced more than 20 cases of DVCs, while three of them, wbh, mhz and ckt produced a relatively smaller number of tokens: 6, 9 and 9 respectively. Among the eight monolingual children, six (cgk, mhz, ckt, ltf, hhc and ccc) produced complex DVCs more frequently than simple DVCs, while the other two (wbh and lly) produced simple DVCs more frequently than complex DVCs. The results suggest that the distribution of simple DVCs and complex DVCs in bilingual children is quite similar to that in monolingual children: the majority (6 out of 7 in bilingual children and 6 out of 8 in monolingual children) produced more complex DVCs than simple DVCs.

The earliest DVCs are found in mhz at 1;10;23 (complex DVCs), which is slightly later than the bilingual children Alicia and Sophie. The first non-imitative

use of DVCs in the other monolingual children is between age 1;11;01 to 3;02;20. Since the data begin after age 2 for 4 of them (wbh, ltf, hhc and lly), these four children may actually have produced DVCs before the recording began. The gap between the occurrence of first non-imitative simple DVCs and complex DVCs ranges from 10 days (hhc) to around 5 months (ckt).

Overall, we cannot see a clear difference between monolingual and bilingual children in respect of the distribution of simple DVCs and complex DVCs. Since the starting age of the data of both the bilingual and monolingual children varies, we cannot make a comparison between the two groups of children in terms of the age of first non-imitative use. In general, the corpus data suggest that both groups of children tend to produce complex DVCs more frequently than simple DVCs.

6.2 Directional verbs as complements and main verbs

We now look at the use of directional verbs as both verb complement and main verb. Only five of the directional verbs, namely *hei2* 起 "up", *ceot1* 出 "out", *lok6* 落 "down", *soeng5* 上 "up" and *jap6* 入 "in" are studied since their meaning when used as a main verb is closer to that when used as directional verb complement. The other directional verbs have different meanings when they are used as main verb. For instance, *hoi1* 開 means "open" when it is used as a main verb alone, which is

different from its directional meaning "away". *faan1* 返 "back" can appear after a main verb conveying the meaning of "the resumption of state" apart from its directional use[15].

The uses of the five directional verbs are classified into three categories: main verb, intransitive DVCs and transitive DVCs:

Main verb:

(1) 佢 想 出 嚟 呀 . (Janet 3;00;11)

keoi5 soeng2 ceot1-lai4 aa1.

He/she want out-come SFP

He/she wants to come out.

Intransitive DVC

(2) 飛 出 去 . (Timmy 3;06;25)

fei1 ceot1-heoi3

---

[15] This can be illustrated in the following example :

(1) 好 返

hou2 faan1

well again(reformed)

"recover"

In (1), *faan1* occurs after the verb *hou2* "well", meaning to return to its initial state of being "well". Since the use of *faan1* as a marker of resumption are quite common in both adult and child Cantonese, and this use is different from the directional use, *faan1* 返 "back" will not be included for analysis.

fly out-go

Fly out of here.

Transitive DVC

(3) 攞 個 碟 出 嚟 啦 . (Timmy 3;05;28)

lo2 go3 dip2 ceot1-lai4 laa1

take CL plate out-come SFP

Take the plate out.

In (1), *ceot1* is a main verb indicating the meaning of "go out". In (2), *ceot1* is placed after the main verb *fei1* "fly", forming an intransitive DVC meaning "fly out of some place". In (3), the main verb *lo2* "take" is a transitive verb, *ceot1 lai4* is the complex DVC of the main verb, which is placed after the direct object[16]. Both intransitive and transitive DVCs reflect the children's uses of directional verbs as verb complements, since the directional verbs are placed after the main verb to indicate directional/spatial information in these two constructions.

In Chapter Three, we predicted that the proportion of directional verbs used as main verbs in bilingual children may be lower than that of the monolingual children since the corresponding form in English, verb particles, are homophonous to

[16] It should be noted that transitive DVCs with null object are also counted as "Transitive DVC" in this study, since null objects are a common feature among both bilingual and monolingual children.

prepositions/adverbs, and they normally cannot be used as main verbs. We predicted that the properties of each English particle may delay or constrain the development of its corresponding form in Cantonese directional verbs, causing a smaller ratio of main verb uses than we see in monolingual children.

Tables 6.3 and 6.4 show the proportion of directional verbs used in main verb constructions and directional verb complement constructions among bilingual and monolingual children.

Table 6.3 Distribution of directional verbs as main verbs and complements in bilingual children

	Timmy	Sophie	Alicia	Llywelyn	Janet	Charlotte	Kathryn	Total
Main verb	227 (64.3%)	86 (71.6%)	31 (53.4%)	28 (93.3%)	56 (60.2%)	1 (25%)	30 (49.2%)	459 (63.8%)
Intr. DVC	76 (21.5%)	16 (13.3%)	5 (8.6%)	1 (3.3%)	14 (15.1%)	2 (50%)	9 (14.8%)	123 (17.1%)
Tr. DVC	50 (19.8%)	18 (15%)	22 (37.9%)	1 (3.3%)	23 (24.7%)	1 (25%)	22 (36.1%)	137 (19.1%)

Table 6.4 Distribution of directional verbs as main verbs and complements in monolingual children

	wbh	Cgk	mhz	ckt	ltf	hhc	lly	ccc	Total
Main verb	33 (82.5%)	102 (61.8%)	87 (87%)	233 (95.1%)	66 (61.1%)	97 (70.3%)	61 (59.8%)	147 (76.6%)	826 (75.8%)
Intr. DVC	5	17	4	5	19	18	20	15	103
Tr. DVC	2	46	9	7	23	23	21	30	161

A one-way ANOVA analysis is conducted to compare the mean of main verb percentage among Cantonese-dominant bilinguals, non-Cantonese-dominant bilinguals and Cantonese monolinguals. Results show that there is a significant difference between groups ($F(2, 12) = 5.430$, $p < .05$). Cantonese-dominant bilinguals, non-Cantonese-dominant bilinguals and Cantonese monolinguals have an average main verb percentage of 68.6%, 37.1% and 74.3% respectively. A post-hoc test shows that non-Cantonese-dominant bilinguals perform differently from the other two groups, whereas the difference between the group of Cantonese-dominant bilinguals and Cantonese monolinguals is not significant. These results indicate that in terms of main verb percentage, Cantonese-dominant bilingual children perform similarly to their monolingual counterparts, whereas there is a significant difference between the non-Cantonese-dominant bilinguals and the other two groups. Cross-linguistic influence occurs only in the two non-Cantonese-dominant bilinguals, producing a relatively lower main verb percentage, but not in the Cantonese-dominant children. This result can be attributed to language dominance, where the performance of the stronger language in unbalanced bilingual children is similar to monolingual children.

When we look at the main verb percentage of each particular directional verb, the ranking from the highest main verb percentage to the lowest is almost the same

in monolingual and bilingual children, with a slight difference between the position of *soeng5* 上 "up" and *ceot1* 出 "out":

Table 6.5 The ranking of most frequent directional verbs in bilingual and monolingual children

Monolingual children (N=8)	Bilingual children (N=8)
jap6 入 "in" (94.6%)	*jap6* 入 "in" (90.6%)
hei2 起 "up" (85.4%)	*hei2* 起 "up" (78.8%)
soeng5 上 "up" (74.5%)	*ceot1* 出 "out" (63.4%)
ceot1 出 "out" (73.7%)	*soeng5* 上 "up" (62.3%)
Lok6 落 "down" (62.3%)	*lok6* 落 "down" (51.6%)

When we consider the Cantonese-dominant children only, the result is as follows:

Table 6.6 The ranking of most frequent directional verbs in Cantonese-dominant bilingual and monolingual children

Monolingual children (N=8)	Cantonese-dominant Bilingual children N=5
Jap6 入 "in" (94.6%)	*jap6* 入 "in" (90.2%)
Hei2 起 "up" (85.4%)	*hei2* 起 "up" (78.1%)
soeng5 上 "up" (74.5%)	*soeng5* 上 "up" (66.2%)
ceot1 出 "out" (73.7%)	*ceot1* 出 "out" (64.9%)
lok6 落 "down" (62.3%)	*lok6* 落 "down" (51.5%)

The ranking of main verb percentage in monolingual children is now the same as that in Cantonese dominant bilingual children. This result again suggests that Cantonese-dominant and monolingual children follow a similar pattern in producing this type of directional verb.

6.3 Frequency of directional verb complements

Now let's look at the frequency of all the directional verb complements in DVCs:

Table 6.7 Frequency of individual directional verb complements in Cantonese-dominant bilingual children

	Timmy	Sophie	Alicia	Llywelyn	Janet	Total
ceot1 出 out	36	12	5	0	7	60
lok6 落 down	11	2	11	0	11	35
faan1 返 back	3	4	1	0	9	17
hoi1 開 away	6	0	3	1	1	11
dai1 低 down	0	5	4	2	0	11
soeng5 上 up	0	1	3	0	4	8
jap6 入 in	2	1	3	1	0	7
zau2 走 away	4	0	1	0	0	5
hei2 起 up	1	2	0	0	0	3
	62	27	31	4	32	156

Table 6.8 Frequency of individual directional verb complements in non-Cantonese-dominant bilingual children

	Charlotte	Kathryn	Total
lok6 落 down	0	12	12
ceot1 出 out	1	9	10
faan1 返 back	0	2	2
soeng5 上 up	0	1	1
dai1 低 down	0	1	1
hei2 起 up	0	0	0
hoi1 開 away	0	0	0
jap6 入 in	0	0	0
zau2 走 away	0	0	0
	1	25	26

From Table 6.7, *ceot1* 出 "out" and *lok6* 落 "down" are the most frequent directional verb complements produced by Cantonese-dominant bilingual children, followed by *faan1* 返 "back", *hoi1* 開 "away" and *dai1* 低 "down". Only a few tokens are found for other directional verb complements such as *soeng5* 上 "up", *jap6* 入 "in", *zau2* 走 "away" and *hei2* 起 "up" in Cantonese DVCs. For non-Cantonese-dominant bilingual children (table 6f), 出 "out" and *lok6* 落 "down" are also the most frequent directional verb complements produced, whereas no tokens of *hei2* 起 "up" , *hoi1* 開 "away", *jap6* 入 "in", *zau2* 走 "away" are found in DVCs.

Recalling that the English particle "out" is the most frequent verb particle used by the Cantonese-dominant children, the high frequency of Cantonese *ceot1* 出 "out" seems to correspond to the English data. On the other hand, the frequency of "down" in English VPCs is relatively low in both Cantonese-dominant and non-Cantonese-dominant bilinguals. However, one of the corresponding forms of English particle "down", the Cantonese *lok6* 落 "down" is relatively frequent among all the directional verb complements. Among the Cantonese directional complements, there are two directional verb complements containing the meaning of "down": *lok6* 落 "down" and *dai1* 低 "down". These two Cantonese directional verb complements differ in several ways. *lok6* 落 "down", as other directional verbs,

can take a locative object when used as a main verb:

(4) 落 樓梯

lok6 lau4 tai1

move down staircase

"go downstairs"

On the other hand, *dai1* 低 "down" cannot take a locative object. When used as a directional verb complement, *lok6* 落 "down" obligatorily combines with another directional verb complement *lai4* 嚟 "come" or *heoi3* 去 "go" to form a compound directional complements; whereas *dai1* 低 "down" do not form compound directional complements with other directional verbs. Moreover, *lok6* 落 "down" tends to denote the path in motion events, whereas *dai1* 低 "down" tends to encode the goal. Moreover, the frequency of *dai1* 低 "down" as complement is much lower than *lok6* 落 "down" as indicated in Table 6.7 and Table 6.8, corresponding to the low frequency of English particle *down* in VPCs. Therefore, it is possible that for bilingual children *dai1* 低 "down" is a closer equivalent to the English particle *down*.

6.4 Placement of objects

In English VPCs, the placement of the direct object determines the VPC order: split order when the object precedes the particle; non-split order when the object follows the particle. In Cantonese DVCs, however, the object can be omitted, forming a null-object construction. In this case, the word order between the verb and its complement cannot be determined without the presence of a direct object. Apart from null-objects, the object can be topicalized or located in the object position:

(5) a. 呢 張 擺 落 去 呀 . (Alicia 1;07;30)

nei1 zoeng1 baai2 lok6-heoi3 aa1

this CL put down-go SFP

"This one, put it in."

b. 擺 呢 張 落 去 呀 .

baai2 nei1 zoeng1 lok6-heoi3 aa1

put this CL down-go SFP

"put this one in"

In example (5a), the direct object *nei1 zoeng1* is topicalized, appearing in the sentence initial position, where the object position is null. When the object is not topicalized as in (5b), it appears after the main verb, followed by the complex

directional complement *lok6 heoi3* "down away".

The direct object can also be right dislocated, occurring after the whole DVC. A sentence final particle is required after the DVC and before the right dislocated direct object:

(6) a. 都 攞 唔 出 啦 呢 條 片片 . (Alicia 3;00;24)

dou1 lo2 m4 ceot1 laa1 nei1 tiu4 pin2 pin2

dou1 take not out SFP this CL diaper

"(I) can't take it out, this diaper".

b. 都 攞 唔 出 呢 條 片片啦.

dou1 lo2 m4 ceot1 nei1 tiu4 pin2 pin2 laa1

dou1 take not out this CL diaper SFP

"(I) can't take (it) out, this diaper"

In (6a), the object *nei1 tiu4 pin2 pin2* occurs at the right edge of the utterance, following the sentence final particle *laa1*. Unlike (6a), the object in (6b) occurs after the directional complement *ceot1* and before the sentence final particle *laa1*. The difference between (6a) and (6b) in word order is the order of the sentence final particle and the direct object: when the direct object is right dislocated, it occurs

after the final sentence particle.

Let's look at the data on DVC with respect to the object:

Table 6.9 Direct object in Cantonese DVCs

	Bilingual children	Monolingual children
DVC with direct object	53 (32.3%)	46 (25%)
DVC with null-object	111 (67.6%)	138 (75%)
Topicalization of direct object	12	4
Right dislocation of direct object	2	3

A Chi-square test comparing the correlation between bilingual/monolingual children and DVC with overt object/null object revealed that the relationship between these two variables is not significant ($\chi^2(1)=2.281$, $p>.05$). Though the average percentage of DVC with null objects in bilingual children is lower than monolingual children as we would expect if there is cross-linguistic influence from English, the null object rate is not statistically related to whether the child is bilingual or monolingual.

When looking at the frequency of topicalization of direct object in DVCs, bilingual children produced a greater number (12 cases) than the monolingual children (4 cases). The number of topicalization of direct object in the two groups of

children is given in table 6.10 and 6.11:

Table 6.10 Topicalization of object in Cantonese DVCs in bilingual children

Timmy	Sophie	Alicia	Llywelyn	Janet	Charlotte	Kathryn
4	0	3	0	3	1	1

Table 6.11 Topicalization of object in Cantonese DVCs in monolingual children

wbh	cgk	mhz	ckt	ltf	hhc	lly	ccc
1	0	1	0	1	0	1	0

Though the cases of topicalization in DVCs are not frequent, we can still see a difference from the two groups of children. Table 6.10 shows that three of the bilingual children, Timmy, Alicia and Janet produced 4, 3 and 3 topicalized DVCs respectively, which is much higher than the other children. 5 out of 7 bilingual children produced at least one topicalized DVC. On the other hand, only 4 of the 8 monolingual children produced topicalized DVCs, with each producing only one token.

When the direct object is topicalized in a transitive DVC, the direct object is placed at the sentence initial position, and the direct object position is null. When the direct object is omitted or topicalized, the bilingual children do not have to make a decision on the placement of the object: whether it is placed before or after the directional verb complement. It is possible that that topicalization is one strategy the bilingual children adopted to avoid the choice of word order in Cantonese DVCs.

However, very little is known about the acquisition of topicalization in both

monolinguals and bilinguals, and children can also produce topicalization in other constructions apart from DVCs. It is possible that bilingual children in general produced more instances of topicalization than the monolinguals apart from DVCs. However, it is still reasonable to hypothesize that the higher frequency of topicalized Cantonese DVC in bilingual children is due to language overlap in word order in English VPCs and Cantonese DVCs, where bilingual children tried to use topicalization as a relief strategy in Cantonese DVCs.

6.5 Non-target forms

6.5.1 Absence of the second verb complement in Cantonese complex DVCs

In one of the non-Cantonese-dominant bilinguals, Kathryn, two cases of non-target forms in Cantonese DVCs are found:

(7) a. *唔 可以 擺 落 gaa3 (Kathryn 4;05;10)

m4 ho2ji5 baai2 lok6 gaa3

Not can put down SFP

"You can't put it in"

b 唔 可以 擺 落 嚟/去 gaa3

m4 ho2ji5 baai2 lok6-lai4/heoi3 gaa3

not can put down-come/go SFP

(8) a *係 呀 擺 啲 種子 落 (Kathryn 3;04;14)

hai6 aa1 baai2 di1 zung2zi2 lok6

yes SFP put CLF seed down

"Yes, put some seeds there"

b 係 呀 擺 啲 種子 落 嚟/去

hai6 aa1 baai2 di1 zung2zi2 lok6-lai4 /heoi3

yes SFP baai2 di1 zung2zi2 down-come/go

In (7a) and (8a), the second directional verb complement *lai4/heoi3* "come/go" in a complex DVC is absent. *lai4/heoi3* is obligatory in a complex DVC to indicate the location/goal where the object is placed. (7a) is a null-object construction, in which *lai4/heoi3* should combine with *lok6* "down" 落 to form a compound directional verb complement, as in (7b) In (8a), there is a direct object between the verb *baai2* "put" and the verb complement *lok6* "down", which is similar to the surface form of English split VPCs. The absence of *lai4/heoi3* "come/go" leads to ungrammaticality in this sentence. Unlike English split VPCs, only in Cantonese complex DVCs can the direct object be placed between the main verb and verb complement, and

lai4/heoi3 is obligatorily placed after a directional verb complement in Cantonese complex DVC, as in (8b). This type of non-target form implies that Kathryn may have difficulty in producing complex DVCs, where *lai4/heoi3* "come/go" is obligatory after the first directional complement. Secondly, the word order of the non-target form in (8a) resembles the surface structure of English split VPCs. The production of (8a) may be also due to the language transfer from the word order of English split VPCs.

6.5.2 Non-split order in complex DVCs

There are also non-target forms involving the order of object and complement:

(9) a. *我 攞 出 嚟 呢 個, 可 唔 可以 呀 ? (Alicia 3;00;24)

ngo5 lo2 ceot1-lai4 nei1 go3 ho2 m4 ho2ji5 aa1

I take out-come this one can not can SFP

"Can I take out this one?"

b. 我 攞 呢 個 出 嚟 , 可 唔 可以 呀 ?

ngo5 lo2 nei1 go3 ceot1-lai4 ho2 m4 ho2 ji5 aa1 ?

I take this one out-come can not can SFP

Before we discuss example (9a), let's review the word order of Cantonese DVC:

A complex DVC with overt object:

Verb - Object - Complex directional complement (with *lai4/heoi3*)

A simple DVC with overt object:

Verb- Simple directional complement - Direct object

However, the word order of (9a) is ungrammatical since the direct object *nei1 go3* "this one" is placed after the complex directional complement, which is the same as the word order of simple DVC. It should be noted that (9a) is different from right dislocation as in (6a). In a right dislocated complex DVC, a sentence final particle occurs after the compound directional complement and before the direct object, resulting in a structure of [V-Compound directional complement-SFP-object]; whereas in (9) there is no sentence final particle after the complex DVC, with a structure of [*V-Compound directional complement-object-(SFP)]. This type of non-target form is also found in other three Cantonese-dominant bilingual children Janet (3;07.21, 1 token), Sophie (2;4.18, 1 token) and Timmy(2;3.17, 1 token) but not in monolingual children:

(10) [V-compound directional complement-object-SFP]

開 出 嚟 呢 個 呀 (Sophie 2;04;18)

Hoi1 ceot1-lai4 nei1 go3 aa1

open out-come this CL SFP

"Open this"

(11) . [V-compound directional complement-object]

要 唔 要 擺 返 去 呢 個 嘢 ?

jiu3 m4 jiu4 baai2 faan1-heoi3 nei1 go3 je5

need not need put back-go this CL thing

"Do (I) need to put this back?"

These results show that even Cantonese-dominant bilingual children may produce non-target Cantonese DVCs with respect to word order. These cases are more interesting because while adult English VPCs tend to be in split order, these bilingual children, produce non-split English VPCs more frequently than either the adults or monolingual children. When it comes to Cantonese complex DVCs in which the object should be placed before the verb complement (split order), they produce some cases in non-split like order, where the direct object occurs after the verb directional complement. This phenomenon is more evident in Alicia: all of her

productions of English VPCs are in non-split order, as reported in Chapter 5. This implies that Alicia preferred a non-split order in English VPCs, and this preference can even be reflected in her Cantonese complex DVCs as in (9a).

6.5.3 Negation in Cantonese DVC

Two non-target forms of negated DVCs are found in the corpus:

(10) a. *唔 擺 倒 落 . (Alicia 2;06;02)

m4 baai2 dou2 lok6

not put can down

"can't put it in"

b. 擺 唔 落

baai2 m4 lok6

put not down

c. *唔 企 得 落 嘞 . (Timmy 2;07;01)

m4 kei5 afaf1 lok6 laa1

not stand-up can down SFP

"can't stand up there"

d. 企 唔 落

kei5 m4 lok6

stand-up not down

When a Cantonese DVC is negated, the negator *m4* is inserted between the verb and the verb complement, as shown in (10b) and (10d). In (10a) and (10c), on the other hand, the negator *m4* occurs in the sentence initial position, preceding the main verb. In addition, the modal marker *dou2* or *dak1* is inserted between the verb and the directional complement In fact, the sentences with *dou2* and *dak1* are grammatical when the sentences are not negated:

(10) e. 擺 倒 落

baai2 dou2 lok6

put can down

"can put it in"

f. 企 得 落

kei5 dak1 lok6

"can stand up there"

Without the negator *m4*, (10e) and (10f) are grammatical. It seems that the bilingual children simply add the negator *m4* in the sentence initial position to negate the whole sentence, in a way similar to the English negation. For Cantonese, when negating the DVC, the negator *m4* should be inserted between the verb and the verb directional complement. Since (10a) is a null-object construction and (10c) is an intransitive construction, we cannot see the influence of object placement in these two cases. When an object is presented, the situation would be more complicated and bilingual children are predicted to experience difficulty in this area. However, we have not observed any cases of negated DVC with overt object in the corpus due to the limited sample, or perhaps bilingual children simply avoided producing this type of construction.

6.4.5 Other non-target forms

(11) a. *就 跌 佢 出 喇 . (Timmy 2;05;26)

zau6 dit3 keoi5 ceot1 laa1

almost fall it out SFP

"It almost drops out"

b. 佢 就 跌 出 嚟/去 喇 .

keoi5 zau6 dit1 ceot1-lai4/heoi3 laa1

It almost fall out-come/go SFP

There are two major problems in the non-target form in (11a). The first one is related to the transitivity of the main verb: the main verb *dit1* is an unaccusative verb and the internal argument *keoi5* 'it' should be placed in the sentential initial position instead of the object position as shown in (11b). However, Timmy put the *keoi5* "it" between the verb and the directional complement *ceot1* "out", forming a structure similar to English split VPC structure (Verb + direct object + particle). The other problem is the absence of *lai4/heoi3* "come/go" in the DVC. *lai4/heoi3* "come/go" should occur after the main verb *dit1* to form a compound DVC to indicate the point of orientation of the speaker, as shown in (11b). The crucial point in (11) is that apart from the verb transitivity problem, the non-target form resembles the English split VPC, where the object precedes the verb complement and follows the main verb.

6.6 Summary

In this Chapter, we first looked at the age of first non-imitative use and the proportion of simple vs complex DVCs. Results in this domain do not show clear differences between the monolinguals and bilinguals. Next we looked at the

distribution of directional verbs as both main verb and verb complement. Statistical analysis revealed that non-Cantonese-dominant bilingual children perform significantly differently from Cantonese-dominant bilinguals and Cantonese monolinguals. When we look at the frequency of several directional verbs, the ranking is more or less the same between monolingual and bilingual children. This ranking corresponds to the frequency ranking of bilingual children's English particles: for certain English particles which are produced more frequently than the monolinguals by bilingual children, the corresponding forms in Cantonese directional complements are also produced with a higher frequency. Finally, several non-target forms are reported, some of which reflect language transfer from English to Cantonese in bilinguals.

Unlike English VPCs, bilingual children do not perform significantly different with regard to word order compared to monolingual children. However, cross-linguistic influence is exhibited in several other respects, including the low ratio of directional verbs as main verbs in non-Cantonese-dominant bilinguals, non-target forms which reflect the word order of English VPCs and non-target forms which shows difficulty in placing the object.

Chapter Seven Discussion of Results

This chapter discusses cross-linguistic influence and factors that play a role in the acquisition of English VPCs and Cantonese DVCs in bilingual children. Cross-linguistic effects are observed in the development of English VPCs and Cantonese DVCs in Cantonese-English bilingual children, and both structural overlap of the two languages and language dominance play a role in accounting for the cross-linguistic influence in bilingual children.

7.1 Cross-linguistic influence in bilingual acquisition

Many studies have suggested that the two languages in bilingual children interact with each other and cross-linguistic influence or language transfer may occur in their development of the two languages. Hulk and Müller (2000) have proposed a condition for the cross-linguistic influence to occur based on the structural overlap: if language A allows two or more options in a target structure, and language B overlaps with one of these options in that particular structure, cross-linguistic influence is likely to occur. If cross-linguistic influence occurs due to this type of structural overlap, the production of language A in bilingual children will be influenced by language B, but not the other way around. A prediction from this hypothesis is that cross-linguistic influence will occur in the domain in which partial

overlap applies, regardless of the degree of dominance of the bilingual children. Another factor that has been suggested to play a role in cross-linguistic influence is language dominance. Under this hypothesis, cross-linguistic influence occurs from the dominant to the non-dominant language, and not the other way around. Parental input, on the other hand, has also been considered as a language-external factor in accounting for cross-linguistic influence. In order to understand the conditions for cross-linguistic influence, we study English VPCs and Cantonese DVCs in seven bilingual children. This domain in the two target languages meets the structural overlap condition as described in Hulk and Müller (2000), and the seven bilingual children are either dominant in Cantonese/English or balanced, so that the factors of structural overlap and language dominance can be tested.

7.2 Cross-linguistic influence in English VPCs

English VPCs allow two word orders, namely the split and non-split order. In split order, the verb and the particle are "split" by a direct object, whereas in non-split order, the verb and the particle are "non-split", and the direct object is located after the particle. In Cantonese simple DVCs, the verb and the directional complement cannot be interrupted by an object, and the object appears after the directional complement, forming a similar structure to the English "non-split" VPC. In this case,

English (language A) allows two options in word order, while Cantonese (language B) overlaps and allows only of the options in English. We predicted that if cross-linguistic influence took place, differences in the word ordering in English VPCs would appear between bilinguals and monolinguals: bilingual children should produce more non-split VPCs than monolinguals due to the influence from the non-split order in the Cantonese DVC. Based on the hypothesis of structural overlap, the directionality of cross-linguistic influence would be from Cantonese to English, but not the other way around.

On the other hand, if language dominance is an explanatory factor, cross-linguistic influence may occur from the dominant to the non-dominant language. In the introduction we have claimed that the two factors should be integrated in accounting for the cross-linguistic influence: the structural overlap hypothesis predicts possible domains for cross-linguistic influence, whereas language dominance may determine the extent of language transfer.

In order to investigate the presence of cross-linguistic influence in English VPCs, we compared the Cantonese-English bilingual children's production of split and non-split order in English VPCs with those of English monolinguals. The English monolingual children produced more than 90% of their VPCs in split order, whereas four of the five Cantonese-dominant children produced less split VPCs,

ranging from 0% to 60.9%. The remaining Cantonese-dominant bilingual Janet, however, produced 91.3% of her VPCs in split order, which is close to English monolinguals. Among the non-Cantonese-dominant children, Kathryn, who is more balanced in both languages, produced 96.8% of her VPCs in split order which is close to English monolinguals. But another bilingual child, Charlotte, who is more dominant in English, produced only 55.3% of her VPCs in split order, which is within the range of the Cantonese-dominant bilinguals. This type of cross-linguistic influence in the form of frequency is explainable by structural overlap: English VPCs allow two orders, namely split and non-split order; Cantonese simple DVCs, which is the corresponding structure to English VPCs, allow only one order which resembles and therefore "overlaps" with the English non-split order. As a result, cross-linguistic influence occurs in bilingual children's English VPCs: more non-split VPCs, which overlap with the word order of Cantonese DVCs, were produced by bilingual children. The directionality of the cross-linguistic influence is as predicted by the hypothesis of structural overlap, namely from the language which allows only one option to the language allowing two options.

This finding can also be accounted for by language dominance if we only look at four of the Cantonese dominant children and one of the non-Cantonese-dominant children: cross-linguistic influence appears in Cantonese dominant children from

their stronger language Cantonese to their weaker language English. More specifically, the four Cantonese dominant bilinguals produced more non-split VPCs (one of the two options in English) which resemble the Cantonese simple DVC structure (the only one option in Cantonese) than the English monolinguals. On the other hand, the non-Cantonese-dominant bilingual, Kathryn, produced the majority of her VPCs in split order, like English monolinguals. Language dominance correctly predicted the cross-linguistic influence from Cantonese to English in Cantonese-dominant children, and the absence of cross-linguistic influence in one non-Cantonese-dominant bilingual child. However, when we look at one of the Cantonese-dominant children, Janet, who performed more closely to English monolinguals, and the English dominant child, Charlotte, who behaved more like the Cantonese dominant bilinguals, the language dominance hypothesis alone seems not to be able to explain their performance. We might attribute this discrepancy to individual variation which will be discussed in the last section.

Apart from language dominance and structural overlap, an analysis of word order in English VPCs in parental input to two of the Cantonese-dominant children, Alicia and Janet was also conducted. Both Alicia and Janet are Cantonese-dominant, but their performance on the word order is different: Alicia performed differently from English monolinguals, producing zero cases of split VPCs, and cross-linguistic

influence is evident in her data; Janet's performance is close to English monolinguals, producing a high rate of split VPCs. When looking at the parental input, the rate of split VPCs are only slightly different: around 90% in Janet's father and around 80% in Alicia's father. It is unlikely that the 10% difference in parental input would contribute to the 90% performance difference among the two children: Alicia produced no VPCs in split order, whereas Janet produced more than 90% of her VPCs in split order. Apparently the effect of parental input does not exert a strong influence on the production of VPCs by the Cantonese-dominant bilingual child Alicia.

We also extracted all the non-split VPCs produced by bilingual children and compared them with monolingual children. Among the non-split VPCs, bilingual children produce a higher percentage of spatial VPCs than monolingual children: again this is an indication of cross-linguistic influence from Cantonese, in the sense that Cantonese simple DVCs which are directional obligatorily appear in non-split order.

In the next step, we investigated the frequency of English particles. The most frequent particles in English monolinguals are *on* and *off*, followed by *back*, *up*, *in*, *away*, *out* and *down*. The most frequent particles, *on* and *off* do not have corresponding forms in Cantonese, whereas *in*, *away*, *out* and *down* do have

corresponding forms in Cantonese which encode spatial/directional meanings. The most frequent English particles in bilingual children are *out* and *up*, followed by *in*, *off*, *away*, *back*, *on* and *down*. The most frequent particles in English monolinguals, *on* and *off*, ranked relatively low among Cantonese-dominant bilingual children in terms of frequency, while the directional/location particles, *out* and *up*, ranked significantly higher when compared to monolingual English children. When we look at the non-Cantonese dominant children the situation is different: *on* and *off*, just as in monolingual children, are the most frequent English particles produced.

The difference between the three groups of children, monolingual English monolinguals, Cantonese-dominant bilinguals and non-Cantonese-dominant bilinguals can be explained by language dominance. The non-Cantonese-dominant bilinguals perform similarly to their monolingual counterparts, with high frequency of non-spatial particles, whereas the Cantonese-dominant bilinguals perform differently from English monolinguals. The difference in the frequency of the particles between Cantonese dominant bilinguals and monolinguals, on the other hand, can be explained by the cross-linguistic influence from Cantonese. Since *on* and *off* do not have corresponding forms among the Cantonese verb complements, the development of these two particles may be delayed among Cantonese dominant bilinguals. On the other hand, the directional/spatial particles such as *out* and *up* do

have a corresponding form in Cantonese DVCs, and these features may "accelerate" the acquisition of these directional/spatial particles. In other words, the development of the English particles interacts with Cantonese verb directional complements in bilingual children, being delayed or accelerated due to the absence or presence of the corresponding forms between the two languages.

Finally, several types of non-target forms which are not identified in monolingual children are observed in bilingual children. These non-target forms in English VPCs resemble the structure of Cantonese DVCs, including the word order [V Particle Pronoun] and certain combinations of verb and particle. It is argued that apart from quantitative differences, qualitative non-target forms are also indicators of cross-linguistic effects.

From the acquisition of English VPCs, we can see that cross-linguistic influence manifests itself in three ways: higher frequency of non-split VPCs; higher frequency of spatial particles; and non-target forms reflecting Cantonese DVC structures. While the first finding can be predicted based on structural overlap, the other two cannot: the high frequency of particles and Cantonese DVC-like non-target forms are not associated with partial overlap in the two languages, but reflect direct language transfer from the properties of Cantonese DVC. It is possible that the structural overlap in one area of the domain, in this case word order, may

also trigger cross-linguistic influence in other areas such as the components of the domain: the particle and the combination of the verb and the particle. Unlike previous studies on bilingual first language acquisition focusing on subject/object omission, VPC is a complex predicate involving word order in syntax, different types of particle and the combination/compositionality of the verb and the particle in semantics. The difference in VPC order among bilinguals and monolinguals is the most prominent evidence of cross-linguistic influence predicted by structural overlap, and the other components of VPC are also shown to demonstrate cross-linguistic influence in terms of non-target forms the bilingual children produced. However, the cross-linguistic influence in these components is not predicted by structural overlap, nor can it be predicted by language dominance. More studies on different types of construction are needed to establish conditions for cross-linguistic influence based on internal language structure.

7.3 Acquisition of Cantonese DVCs

It is noted that there are two types of Cantonese DVCs: simple DVCs and complex DVCs. Unlike English VPCs where two options of word order are available, Cantonese DVCs do not have this optionality. The structure of simple DVCs resembles that of English non-split order: the direct object cannot intervene between

the verb and the verb complement. In complex DVCs, the compounded verb complement consists of two parts: a verb complement that is identical with that those occur in simple DVCs, and an additional complement *lai4/heoi3 'come/go'* which indicates the orientation of the speaker. The complements *lai4/heoi3 'come/go'* are always attached to the previous verb complement and may not be separated from it by other elements. The word order of complex DVCs is different from simple DVCs: an object is immediately adjacent to the verb, followed by the compounded directional complement. This structure resembles the English split VPCs, where objects are located between the verb and the particle.

Little research has been done on the acquisition of Cantonese DVCs in either monolingual or bilingual children. We first examined the age of first non-imitative use of simple and complex DVCs to see if delayed/accelerated development is observed. Results show that the order of first non-imitative use of simple and complex DVCs varies across individual monolingual and bilingual children, and the difference is not significant among the two groups of children due to methodological limitations, including the size of the corpus and the starting age of the data in each child, and thus we cannot determine the exact age of emergence of Cantonese DVCs or make precise comparison with English monolinguals.

Next we looked at the frequency of Cantonese directional complements. The

ranking of frequency among each particular directional complement between the Cantonese bilinguals and monolinguals is similar. The ranking of Cantonese directional complements can account for the frequency ranking of English particles in bilingual children: for those Cantonese directional complements which are produced frequently, the corresponding English particles are also frequently produced. The results reflect the correspondence between English particles and Cantonese directional complements.

One major difference between English VPCs and Cantonese DVCs is the grammatical function of Cantonese directional complements and English particles. Cantonese directional complements can appear in two types of construction: serving as verb complement in DVCs or functioning as a main verb itself. On the other hand, English particles normally cannot function as a main verb. This situation is potentially relevant to the structural overlap hypothesis: Cantonese verb complements allow two options while English only allows in one of them. We predicted that cross-linguistic influence would occur from English to Cantonese: verb complements functioning as main verbs in bilingual children may be less frequent than in Cantonese monolinguals due to influence from English, where particles cannot function as main verbs. We searched five Cantonese directional verb complements which resemble English particles the most. The uses of the five

directional verb complements were categorized into three types: serving as verb complements in transitive construction, serving as verb complements in intransitive construction, and serving as main verb. Results show that non-Cantonese-dominant bilinguals perform differently from Cantonese-dominant bilinguals and Cantonese monolinguals, producing a relatively low main verb percentage. These results are evidence of cross-linguistic influence from English particles: English particles and Cantonese verb directional complements overlap in the sense that they can both appear after the verb to indicate directional/spatial meaning, and Cantonese directional verbs allow two types of uses: appearing after the verb or appearing alone as main verbs, where English particles can only function as the former. The extent of cross-linguistic influence, which is seen only in the non-Cantonese-dominant bilinguals, can be explained by language dominance: their less developed language is influenced by their more advanced language.

We also studied the placement of objects in order to see if there are any differences between the bilinguals and monolinguals. It is found that bilinguals produced more object topicalizations than the monolingual children. In topicalization, the object appears at the left periphery of an utterance. This result implies that bilingual children may experience difficulties in placing the object in Cantonese DVCs, thus they tended to topicalize or the objects when they occur

obligatorily in DVCs. It seems that the two options of word order in English VPCs may cause the bilingual children to have difficulty in locating the objects in Cantonese DVCs, and that topicalization is a relief strategy to avoid the choice of word order.

Non-target forms which are not observed in Cantonese monolinguals were also documented. These non-target forms involve the placement of the object as well as the word order, which reflects language transfer from the Cantonese DVC. In the placement of objects, non-target forms are found in several Cantonese dominant bilingual children in which the object is placed after the directional complement, forming a structure resembling the Cantonese simple DVC or the English non-split VPC. Most Cantonese-dominant bilingual children produced many more non-split VPCs than English monolinguals, and when it comes to Cantonese, they also overgeneralize the non-split word order and apply it to Cantonese complex DVCs, a structure which resembles more the split English VPCs. It seems that after the cross-linguistic influence from Cantonese simple DVCs to English non-split VPCs, the cross-linguistic effects again appeared in Cantonese DVCs, due to the influence of English non-split VPCs. The directionality is multiple in this case: from Cantonese simple DVCs to English non-split VPCs, and then from English non-split VPCs to Cantonese complex DVCs. Although we cannot quantitatively explain the

directionality of cross-linguistic influence in this case, we can at least see that sometimes the directionality of cross-linguistic influence is not limited to a single direction.

The performance of the English-dominant bilingual child, Charlotte, should be highlighted. Cantonese directional verb complements are rarely found in this bilingual child: only a few tokens of Cantonese DVC can be observed. In her English VPCs, despite the fact that she is more dominant in English, she performed more like the Cantonese-dominant bilingual children than the English monolinguals. The case of this child is complicated: performing as Cantonese-dominant in English VPCs, but only few tokens of Cantonese DVCs are found. The few tokens of Cantonese DVCs may be due to a limited amount of data recorded in the corpus, or the structural overlap in English VPCs and Cantonese may cause a more complicated pattern of influence in this child.

7.4 The factors of structural overlap and language dominance

In some studies of bilingual acquisition which take structural overlap as an explanation to account for cross-linguistic influence (Hulk & Müller 2000, Müller & Hulk, 2001), the factor of language dominance is excluded. In this study, we suggest that while structural overlap can predict and explain the area where cross-linguistic

influence occurs, the factor of language dominance can be added to account for the extent of cross-linguistic influence. More specifically, if language A allows two orders, and language B only allows one of these orders, and cross-linguistic influence does occur based on this prediction, this influence may be more prominent and apparent if language B is the dominant language of a bilingual child. In other words, when cross-linguistic influence occurs in some bilingual children, these children tend to be dominant in the language exerting cross-linguistic influence. This proposal could explain the majority of the data in this study. While some Cantonese-dominant and non-Cantonese-dominant bilinguals produced more non-split English VPCs resembling the Cantonese simple DVC structure, these children tend to be Cantonese-dominant rather than non-Cantonese dominant. While structural overlap can explain the quantitative differences between bilinguals and monolinguals, language dominance may explain why this difference is more pronounced in some bilinguals than others. These two factors are indeed not conflicting, but complementary in explaining the directionality and intensity of cross-linguistic influence.

7.5 Parental Input

A parental input analysis was carried out for two Cantonese-dominant children,

Alicia and Janet. These two children perform differently in the frequency of split VPCs: Alicia did not produce any split VPCs whereas Janet produced more than 90% of her VPCs in split order. The discrepancy in performance cannot be accounted for by parental input: Alicia's father produced around 80% of his VPCs in split order, which is completely different from Alicia's performance where no split VPCs are found. It seems that parental input, at least in the domain of VPC, does not play a role in accounting for the occurrence of cross-linguistic influence.

7.6 Acquisition of the components of VPC and DVC

When we look at the frequency of English particles and Cantonese directional complements, we find that the directional particles are produced more frequently than the non-directional particles. It seems that the cross-linguistic influence from Cantonese, where generally the directional complements occupy the position of English particles, may accelerate acquisition of English directional particles. On the other hand, the general lack of counterparts to non-directional English particles in Cantonese may delay the acquisition of these particles. Thus apart from the structural overlap, the presence or absence of certain elements in the two grammars may also lead to acceleration/delay in acquisition. This factor is a direct result of the differences in internal structure between the two grammars.

7.7 Individual differences

It is noted that one of the Cantonese-dominant children, Janet, performed similarly to the English monolinguals rather than the Cantonese-dominant bilinguals in her production of English VPCs. At the same time, her Cantonese DVCs are similar to the Cantonese-dominant bilinguals. On the other hand, the English-dominant bilingual, Charlotte, performed differently from English monolinguals in her English, and produced very few tokens of Cantonese DVCs. It is noted that while structural overlap and language dominance can account for most of the results of this study, they may not be able to explain some individual differences such as the cases of Janet and Charlotte. Despite the exceptional performance of these two children, it is argued that we can still get a clear picture of cross-linguistic influence in VPCs among unbalanced and balanced bilingual children. We may attribute the performance of Janet and Charlotte to individual differences.

7.8 Snyder's parameter for English VPCs

According to Snyder's compounding parameter, "a language permits the English-style verb-particle construction only if it allows speakers to freely create novel, endocentric root compounds". In his categorization of languages, both

English and Chinese belong to the same group, which allows speakers to freely create endocentric root compounds. However, the parameter seems to neglect the nature of the compounding and the definition of "English-style VPC" is not clear. English VPCs indeed contain both compositional and non-compositional VPCs. The occurrence of non-compositional VPCs will not be explained by compounding since they themselves are not compounded, but formed with an idiomatic or aspectual sense. Secondly, if we assume that the Cantonese DVCs are the "English-style VPC", we should not neglect the differences in word order between them and the types of Cantonese DVCs: there are two types of Cantonese DVCs and they are in different word orders.

Our data shows that bilingual children performed differently from their monolingual counterparts in English VPCs due to the difference in word order between the two languages. The "English-style VPC" seems to take at least two forms (compositional vs non-compositional) in this respect, with differences in word order: split and non-split. Moreover, the underlying ordering in English VPC itself is also controversial. It should be noted that before testing this parameter, the word order should be taken into account in evaluating the ability of creating the endocentric compounds.

7.9 Sawyer's study on acquisition of English VPCs

In Sawyer's study, she differentiates compositional and non-compositional VPCs and uses the object omission rate as evidence for differential performance among these two types in monolingual children. In our study, object omission is prominent in English VPCs for bilingual children, and this rate is higher than the English monolinguals. One possible factor could be the cross-linguistic influence of the high null-object rate from Cantonese verbs, where pragmatic context information could contribute to these null-object cases. One additional remark is that there are not many non-compositional VPCs in bilinguals, and the non-compositional VPCs normally cannot be produced productively, but require memorizing. Therefore, it is difficult to study the non-compositional VPCs in bilingual children quantitatively.

Sawyer argued that the monolingual children treated the object as a subject and thus dropped it during the null-subject stage. The case in bilingual children is difficult to evaluate since there is another factor (cross-linguistic influence from Cantonese) governing the null-object rate. We cannot determine if bilingual children omit the object in a VPC because of treating them as subjects, or simply show transfer effects from Cantonese null-object constructions.

7.10 Summary

The results of this thesis show that (a).cross-linguistic influence is bidirectional in the domain studied, and (b).both structural overlap and language dominance can account for the cross-linguistic influence in both English and Cantonese. This is different from Müller (1998) and Hulk and Müller (2000) where cross-linguistic influence was claimed to be unidirectional due to structural overlap, and language dominance was excluded as a factor playing a role in cross-linguistic influence. The factors of language dominance and structural overlap together can explain the main patterns of cross-linguistic influence observed in this study. Previous studies on bilingual acquisition where cross-linguistic influence is found are mainly based on surface structure of a certain syntactic structure in only one of the two target languages. The present study investigates the cross-linguistic influence in two directions: both languages of the bilingual children are examined. Cross-linguistic influence and language transfer are found in both directions. The ratio of split/non-split order in English VPCs, frequency of English particles and Cantonese directional complements, as well as the non-target forms produced in both languages display cross-linguistic influence and language transfer in the bilingual children. While the hypothesis of structural overlap can predict and explain the area where cross-linguistic influence occurs, the factor of language dominance can explain why this influence is more likely to occur in some bilinguals with a higher degree of

language dominance.

Chapter Eight Conclusions and Suggestions for Future Research

This chapter summarizes major findings and arguments in this thesis and makes suggestions for future research. This study explores a new domain, English VPC and its corresponding form Cantonese DVC in seven bilingual children. Different forms of cross-linguistic influence are identified and discussed. Our data confirms Hulk and Müller (2000)'s condition on structural overlap, but at the same time also takes the factor of language dominance into account in our investigation of cross-linguistic influence.

8.1 Conclusions

One of the central issues of bilingual first language acquisition involves the conditions underlying the cross-linguistic influence. Hulk and Müller (2000) proposed an influential hypothesis in predicting cross-linguistic influence: cross-linguistic influence is likely to occur in the interface of two grammars and when there is a certain overlap between the two grammars. Many studies have tested these two conditions and this study tested their second condition on structural overlap. Language dominance has also been shown to be a decisive factor in explaining the patterns of cross-linguistic influence (Yip and Matthews 2000, 2007). This study tests whether these two factors can together account for cross-linguistic

influence. English VPCs and Cantonese DVCs constitute a domain where partial overlap occurs: English VPCs allow two surface orders, and Cantonese DVCs allow only one of the surface orders available in English. We predicted that cross-linguistic influence occurs in this domain and structural overlap and language dominance can be integrated to account for this influence.

In the acquisition of English VPCs, cross-linguistic influence is identified in three ways: the frequency of VPC split/non-split order, the frequency of each particle as well as non-target forms which reflect the structure of Cantonese DVCs. In English VPCs, bilingual children produced non-split order more frequently than monolingual children, and these children tend to be Cantonese-dominant. This cross-linguistic influence can be attributed to both structural overlap and language dominance. In terms of the frequency of each individual particle, Cantonese-dominant children produce spatial particles which have a corresponding form in Cantonese with a higher frequency, whereas non-Cantonese-dominant children perform more similarly to English monolinguals. This finding can be accounted for by the fact that in some respects English particles and Cantonese directional complements constitute a total overlap which accelerates the acquisition of certain spatial particles. Finally, non-target forms which show language transfer effects from the structure of Cantonese DVCs are found. It is argued that

cross-linguistic influence can manifest itself quantitatively (frequency of split/non-split VPCs and frequency of each particle) and qualitatively (non-target forms). While structural overlap predicts the domain for cross-linguistic influence, language dominance determines the extent of cross-linguistic influence. Moreover, complex predicates like VPCs might be more sophisticated than the other domains involving subject/object omission, where other properties are also involved apart from the word order.

Unlike English, Cantonese DVCs do not allow alternative word order. However, bilingual children still experience difficulty in object placement, and non-target forms associated with word order are also found, which indicate cross-linguistic influence from English to Cantonese. The directionality is complicated: firstly it goes from Cantonese to English, i.e. from a stronger language to a weaker language; secondly, the non-split order overgeneralization in English VPCs affected the order of Cantonese complex DVCs. This demonstrates that the two languages in bilingual children interact with each other and the directionality of cross-linguistic influence is not necessarily unidirectional.

The results of this study are significant for bilingual acquisition research in two respects: the factors governing cross-linguistic influence and the manifestations of cross-linguistic influence. Our study has yielded results that support the hypothesis

of structural overlap and demonstrated that language dominance can act as a secondary factor in determining the extent of cross-linguistic influence. Moreover, we have found that cross-linguistic influence can manifest itself in various forms, including quantitative measures in frequency as well as qualitatively the non-target forms in both structures. Moreover, contrary to Hulk and Müller (2000)'s hypothesis, cross-linguistic influence is multidirectional: either from the language allowing only one option to the language permitting two options, or vice versa. This indicates that the two grammars in bilingual children interact with each other constantly in both directions.

8.2 Suggestions for further research

There are a number of limitations in this study. Firstly, the unbalanced number of VPCs between monolingual children and bilingual children make it difficult to compare the performance of the two groups thoroughly. While there are many cases of VPCs in Peter and Eve, a few tokens of VPCs are found among bilingual children. Statistical tests cannot be carried out due to the huge difference between the two groups. Secondly, due to the small number of VPCs, the developmental stage of VPCs across age/MLU cannot be done. It would be interesting to see when the development of VPCs in bilingual children would eventually show similar patterns

to those of monolingual children, and how their developmental patterns relate to their age/MLU. Finally, the data in Cantonese DVCs in monolingual children may not adequately capture their optionality in word order. Only few instances of non-target form involving with word order are found, while Yip and Matthews (2007) claim that these non-target forms occur occasionally in their diary data.

To overcome the challenges presented by the data, it is suggested that an experimental task be used in testing bilingual children's optionality of word order in both English VPCs and Cantonese DVCs. In this case, we may find more prominent and convincing evidence of cross-linguistic influence in quantitative terms.

8.3 Open questions

Previous research testing Hulk & Müller (2000)'s proposal usually focuses on grammatical domains showing contrasts between two languages, e.g., whether the subject/object/determiner is omitted. The domain in English VPCs and Cantonese DVCs is more complicated. Firstly it is difficult to draw direct mapping between the two constructions: Cantonese directional complements and English particles have their own properties, but English VPCs and Cantonese DVCs show partial overlap in both word order and meaning. Secondly, when acquiring English VPCs, bilingual children have to master the word order, the choice of particle as well as the

combination of the verb and the particle, and the same applies to Cantonese DVCs. The complexity in this domain, however, demonstrates different forms of cross-linguistic influence and different direction of language transfer. More research needs to be conducted in domains which show a higher degree of complexity so that the conditions of structural overlap and outcomes of cross-linguistic influence can be characterized more precisely.

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